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# ENVIRONMENTAL ASSESSMENT BOARD

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VOLUME: 255

DATE: Monday, November 5, 1990

BEFORE:

A. KOVEN Chairman

E. MARTEL Member

FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810



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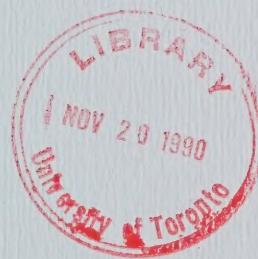
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HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL  
RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR  
TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental  
Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental  
Assessment for Timber Management on Crown  
Lands in Ontario;

- and -

IN THE MATTER of an Order-in-Council  
(O.C. 2449/87) authorizing the  
Environmental Assessment Board to  
administer a funding program, in  
connection with the environmental  
assessment hearing with respect to the  
Timber Management Class  
Environmental Assessment, and to  
distribute funds to qualified  
participants.

-----  
Hearing held at the offices of the Ontario  
Highway Transport Board, Britannica Building,  
151 Bloor Street West, 10th Floor, Toronto,  
Ontario, on Monday, November 5th, 1990,  
commencing at 10:00 a.m.

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VOLUME 255

BEFORE:

MRS. ANNE KOVEN  
MR. ELIE MARTEL

Chairman  
Member



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TOURISM ASSOCIATION



I N D E X    O F    P R O C E E D I N G S

<u>Witness:</u>	<u>Page No.</u>
<u>GEORGE MAREK, Resumed</u>	45840
Continued Direct Examination by Ms. Swenarchuk	45842



1           ---Upon commencing at 10:50 a.m.

2           MADAM CHAIR: Please be seated.

3           Good morning, Mr. Marek.

4           MS. SWENARCHUK: Good morning, Madam  
5           Chair, Mr. Martel.

6           GEORGE MAREK, Resumed

7           MS. SWENARCHUK: I have some brief  
8           introductory comments today. The first is that we  
9           attempted to respond in as much as detail as we could  
10          to the supplementary interrogatories from OFIA/OLMA and  
11          provided them with those at the end of Friday, actually  
12          Saturday morning, at Ms. Cronk's request. And for the  
13          benefit of the Board and the other parties, I will be  
14          producing copies of all that material for everyone  
15          probably later today or early tomorrow. I don't have  
16          the copies of it made yet.

17          With respect to the supplementary  
18          interrogatories submitted by the Federation of Anglers  
19          and Hunters, we are working on response to one question  
20          in the three pages of questions, and it is our position  
21          that the other questions are not proper subjects of  
22          interrogatories. In fact, most of them deal with  
23          subject areas which were not the focus of this witness  
24          statement.

25          Also, as of this date, we are not sure

1       whether Mr. Hanna will be cross-examining or not. Up  
2       to Friday we thought he would not be, now it appears he  
3       will be. We are still not absolutely clear, but I want  
4       to inform the Board that is our position with respect  
5       to the bulk of the supplementary interrogatories filed  
6       by the Anglers and Hunters.

7                   In addition, Madam Chair, Mr. Martel,  
8       there is simply a time problem here in terms of finding  
9       the hours to provide additional information. With  
10      respect to those questions, though, it is our position  
11      that they are not proper subject areas for  
12      supplementary interrogatories. They go far beyond the  
13      requirements of the interrogatory process.

14                  One last preliminary comment. It is my  
15      estimate now that Mr. Marek will be continuing his  
16      direct evidence today and tomorrow, which would mean  
17      that cross-examination could commence on Wednesday I  
18      expect. I would admit it's gone more slowly than I  
19      anticipated.

20                  And just one last comment, and that is an  
21      errata which we were not aware of until this weekend  
22      and, therefore, is not reflected in the errata sheet  
23      that was distributed, and that is on page 35 of the  
24      witness statement, three lines from the bottom.

25                  This is where Mr. Marek describes three

1 of the sites that were studied in the Timmer, Savinsky,  
2 Marek paper and the third site described at the bottom  
3 of the page, paragraph (c), the description that he has  
4 provided there is actually not of the shallow mineral  
5 soil over bedrock stie, but of the deep black spruce  
6 site. For those who are reading the Timmer, Savinsky,  
7 Marek paper, that is the site that was described in  
8 that paper as the black spruce deep site.

9 So those are my preliminary comments and  
10 we are ready to recommence.

11 CONTINUED DIRECT EXAMINATION BY MS. SWENARCHUK:

12 MS. SWENARCHUK: This is slide 101, Madam  
13 Chair, Mr. Martel.

14 THE WITNESS: Madam Chair, Mr. Martel,  
15 we are going to continue this kind of historical  
16 perspective of strip cutting or modified cutting and  
17 this slide represents a detailed or microcosm of a  
18 slide I had shown previously.

19 Just for you who aren't aware of this  
20 modification or this prescription in management of our  
21 forests, if you look from the air -- from the area, you  
22 find here that in many cases a company voluntarily left  
23 some area uncut, for instance, here and over there, due  
24 to the fact that the stands were "for some reason" not  
25 available for cutting or they were small diametres or

1 there was a lack of access. So volunteer, when you see  
2 some of these things.

3 They are very beneficial also. If the  
4 stuff is to provide, the stuff which is grown there -  
5 by stuff I mean the trees - are not merchantable, leave  
6 it behind, leave it behind and perhaps we can take it  
7 later on when the second cut will occur. So this is  
8 almost very beneficial for spruce or for other wildlife  
9 where you leave additional trees or additional stands  
10 on a site for a longer period of time.

11 This kind of pattern is usually done by  
12 foresters and people who know the area, perhaps because  
13 it's mechanical work or work and which doesn't require  
14 too much forestry know-how can be delegated to the  
15 foremen or to the other people who are in charge of the  
16 operation, and here I'm talking about mainly the  
17 logging operation.

18 Frequently, the foresters get involved on  
19 the overall design because he should know and he is the  
20 only one who should really know, based on this  
21 information, scientific know-how, professional know-how  
22 how to deal with this issue; in other words, what kind  
23 of pattern will be designed and eventually implemented.

24 If you remember, Madam Chair, we have  
25 discussed that before the weekend and this all

1       constitutes, this whole layout and implementation  
2       constitutes a really kind of active and productive and  
3       protective part of the forest manager on the ground.

4                     Perhaps there is a feeling that foresters  
5       should take responsibility again and get actively on  
6       the ground involved in such an operation.

7                     Next one, please.

8                     Q. This is slide 103.

9                     A. That is correct. This slide was  
10      taken quite a long time ago, too. It's strip cutting  
11      which was done in 60's on Abitibi, area north of, at  
12      that time, Camp 40 along the Nipigon Lake and results  
13      are visible now.

14                    As a matter of fact, one of the tours  
15      conducted by MNR during the trip between Beardmore --  
16      Lake Nipigon-Beardmore Society and MNR were showing us  
17      results in one of these strips around here. I think it  
18      was over there. The district manager said it's a very  
19      successful thing and the Beardmore Society agreed.

20                   There are additional questions which, no  
21      doubt, is going to be dealt with later on.

22                   This area, again, is area of several  
23      square kilometres and it was done on an operational  
24      scale after we had known some of these conditions. And  
25      after some of these successful trials before in 50's

1 and early 60's, we have embarked on larger area as  
2 operation prescriptions and it worked very well.

3 Again, note this patch left behind, note  
4 some of these hatches over here. This was left by the  
5 company voluntarily. The strips were laid out, but the  
6 company decided for their logging convenience to leave  
7 it, which is nice a thing to see. This is obviously  
8 good area for moose in winter to stay and foliage  
9 around these parameters.

10 Next one, please.

11 Q. This is slide 104.

12 A. I have taken slide of one of these  
13 operations in the Camp 40 area on Auden management unit  
14 from approximately 10,000 feet in the air and that's  
15 what they look like. It's a panorama which should be  
16 well kept, admired by fish and wildlife people who  
17 quite frequently are concerned about the lack of cover  
18 and the lack of habitat conduced to the well-being of  
19 the fish and wildlife. In this case, I suppose for  
20 species which live in that total ecosystem.

21 It breaks up the large area clearcuts.

22 Obviously, the conditions are different if that was all  
23 clearcut and harvested away. So here we have achieved  
24 not only the timber management goals, but we also -- we  
25 try to accommodate other goals which are part of this

1 boreal forest ecosystem.

2 Next one, please.

3 Q. This is slide 105.

4 A. Now, are we in different territory or  
5 are we still in the...

6 Q. Lake Nipigon Forest, 1962, alternate  
7 strip cutting.

8 A. So, from the air we are now coming  
9 down to the ground to investigate the condition  
10 necessary for satisfactory regeneration of black  
11 spruce.

12 Note, please, here that this strip  
13 cutting has been done in kind of a checkerboard  
14 pattern. There you have a clearcut area and just  
15 opposite you have a standing area there, an area left  
16 standing for protection and seed supplies.

17 Also, I have chosen this picture to  
18 present you with other very important aspects of any  
19 modified cutting and, for that matter, any management  
20 of black spruce and that is the site preparation.

21 Site preparation is necessary for many,  
22 many reasons. One of them being that you're not only  
23 preparing site or try to rejuvenate the nutrient  
24 cycling, but also establish the seedbeds to the seed  
25 source coming from these.

1                   Currently that site is to be modified or  
2       the site condition of the top layer of the forest floor  
3       has to be modified, rejuveninated in order to become  
4       biologically active and give us a chance to not only  
5       satisfactory regenerate, but also assure a good growth  
6       of the future crop here.

7                   Quite frequently I am asked by students  
8       and people and professionals I deal with about what  
9       kind of site preparation do you require. What does it  
10      mean site preparation, and I have already mentioned to  
11      you, Madam Chair, that site preparation, being the  
12      important part of any rejuvenation processes in the  
13      forest succession and forest dynamics, may differ and,  
14      frankly speaking, being in site preparation since 50's,  
15      and you have seen my boy standing beside that big  
16      boulder there, that we don't know very much about  
17      "proper, good successful site preparation."

18                  All these terms are terms depending on  
19      the appreciation of the -- or, for that matter,  
20      forester or technician who says: Well, let's do this,  
21      we will see what we are going to create.

22                  As you know, the forest strata of the  
23      forest floor are extremely complex. There are many  
24      layers and many segments, and depending how you treat  
25      these stratas, depending how you severely -- or if you

1 do it very lightly or if you, I suppose, leave it  
2 alone, this predetermines the success of your efforts.  
3 In other words, there you very much affect the future  
4 of your crop there.

5 I think that the primary requirement of  
6 the forest management and prescription for timber  
7 management, harvesting or for silviculture is to know  
8 exactly, exactly or as much as we could know about the  
9 kind of conditions which the forest floor requires and  
10 how to treat it in order to achieve this goal.

11 Q. Mr. Marek, could you indicate for the  
12 Board what the site preparation technique was on this  
13 site?

14 A. The site preparation technique was  
15 that using - and this was way back in the early 60's -  
16 using bulldozer trucks to churn up and mix up the  
17 forest floor, which is the use of feather mosses in  
18 this case, with the top layer of mineral soil.

19 By mixing, I mean that the bulldozer was  
20 twisting around and with the help of the truck was  
21 doing this delicate mixing, and it worked very well.  
22 It worked very well and the result we will see later  
23 on, but one of the problem is, to have it performed by  
24 a bulldozer is very difficult on the browsers which is  
25 the track, constituted track of the bulldozer. So

1       these trucks twist around and you do this mixing.

2                   And, of course, perhaps rightly the  
3       operator said: Well, that's going to be tough on my  
4       bulldozer to do this kind of performance, that's going  
5       to cost extra money. So we are -- immediately the  
6       bulldozer was just running back and forth, but in the  
7       moment he start twisting or he twists, then you have  
8       extra effort anyway involved in that kind of site  
9       preparation.

10                  Q. Mr. Marek, how did -- were there  
11       techniques utilized here to avoid rutting damage on the  
12       site?

13                  A. On this condition, we had also  
14       problems with rise of water table. In any area where  
15       trees are removed, you are going to have an impact  
16       obviously and, therefore, your bulldozer operator got  
17       to be extremely careful not to create this kind of  
18       pattern and this kind of rutting to severely impede the  
19       productivity of the site.

20                  So, in this case, we had some problem  
21       down with the lower more wet sites, we had some problem  
22       over here but, again, the skill, manipulation of the  
23       equipment is very important and I suppose that is the  
24       crux of all delicate or successful site preparation,  
25       that the bulldozer operator or the implementation of

1       the prescription, that had been to the best knowledge  
2       and best effort by the operator himself.

3                   Q. Now, I have another question. The  
4       right-hand of the slide, my right, I guess your left,  
5       is darker than the other half of the slide.

6                   Could you explain that difference,  
7       please?

8                   A. Yes, and that's part of the success  
9       of natural regeneration, establishment of natural  
10      regeneration, is that spruce being a "conservative  
11      species", it's not growing very fast, it's steady, it  
12      requires certain modified condition, at least to my  
13      knowledge, can appreciate these kind of protective  
14      aspect of strip cutting, which has been documented way  
15      back in 50's, that the proper shading and lack of  
16      exposure to the sun during a part of the day when the  
17      sun is the hottest, we are actually modifying the  
18      condition.

19                  Here you can see that strip of dark area  
20      which is shaded and, to my knowledge anyhow, have an  
21      impact on the successful -- on the microsite itself or  
22      the seedbeds, but modifying the climate of the seedbeds  
23      is successful germination and growth of black spruce.

24                  This does not mean, Madam Chair, that you  
25      don't get regeneration over here. Of course you get

1       regeneration. You get regeneration on a number of  
2       places here, too, but what I'm saying is, maximizing  
3       the torrents of black spruce seedlings, especially the  
4       first few days or few months that those little fellows  
5       start setting up its root system, this probably would  
6       be the optimum site of success.

7                  There were many experiments done in  
8       Canada, and also way back in Europe where these systems  
9       are very successful in Norway spruce and it has been  
10      proven under certain conditions, extreme conditions  
11      this is necessary in order to provide the best  
12      condition for the species like black spruce.

13                  Q. Very well. Next slide, please. This  
14      is slide 106.

15                  A. Now, some time it's pretty difficult  
16      to achieve the good site preparation and, again, I'm  
17      using this term "good site preparation" or "proper site  
18      preparation" because black spruce has a very prolific  
19      plate-like root system which is very difficult to break  
20      up. It's just a carpet of a very fibrous root system  
21      which you have to sometimes break up at the top layer  
22      there in order to achieve your microsites and here is a  
23      good example of it. This, of course, has nothing to do  
24      with the proper utilization and also proper cutting  
25      practices.

1                   Now, when you leave high stumps or lots  
2                   of debris on the ground, your effort in site  
3                   preparation may be futile or made much more difficult.  
4                   So one of the kinds of conditions which I think is very  
5                   important, and here is the syntheses of harvesting and  
6                   silviculture where the operator must comply with fairly  
7                   rigid standards, not to make the site preparation too  
8                   difficult.

9                   If he leaves high stumps, how is it  
10                  possible to do the site preparation efficiently because  
11                  you are riding -- or the vehicles, the primary movers  
12                  are riding over on the high stumps. So it can get  
13                  pretty messy where the feeling of all of this action  
14                  and, that is, the harvesting prescription is being done  
15                  not to the best way we know how to do it.

16                  Q. Slide 107, please.

17                  A. Here is, again, the effect of strip  
18                  cutting on the St. Lawrence licence and you, again, see  
19                  the impact of noon sun on the clearcut strip. This is  
20                  usually clear, the angle, the trigonometry of the  
21                  probability of the reach, shading of the site there.  
22                  So there is nothing new.

23                  However, it is interesting that you can  
24                  follow actually the ghost in some cases, the dynamics  
25                  of this stand and a stand which is farther up and

1 completely exposed in the early stages. It depends  
2 many times on site condition, amount of shade,  
3 regeneration is usually quite visible and you get much  
4 more germination, better germination and growth in the  
5 first period of this establishment.

6 The other thing is, I would like to see  
7 that there is some blowdown there. This is part of the  
8 stand which was -- of course, there is the blowdown  
9 there, too, but to my knowledge, and I have followed,  
10 many, many strip cutting and modified cutting, it's  
11 minimized by proper layout and protection of these  
12 clearcut strips.

13 We have a document, which is a study by  
14 Crossfield and Fleming, which is part of my  
15 presentation or part of my documentation, and I  
16 frequently feel that it could be improved yet; in other  
17 words, we can get better results due to the proper  
18 layout and consideration of the particular factors.

19 Next one, please.

20 MS. SWENARCHUK: Madam Chair, Mr. Martel,  
21 we will be looking in more detail of the blowdown issue  
22 a little bit later with -- I am referring to the  
23 Fleming and Crossfield article which is in the source  
24 book.

25 Q. Could we have the next slide, please.

1 This is now slide 108.

2                   A. In my presentation I will talk  
3 frequently of the strip cutting or the modified cutting  
4 in terms of how you divide area properly for modified  
5 cutting. You can do it by just cut the area in half  
6 and leave 50 per cent of a stand standing and you can  
7 clearcut, of course, the other 50 per cent, but in many  
8 instances on sites which are extremely sensitive; in  
9 other words, the sites which deal with this very  
10 shallow soil condition over bedrock, my prescription  
11 was that because we should do it gradually and  
12 progressively.

13                  By progressively, I mean that you divide  
14 the area in more than a two-cut system, we call it to  
15 two cut or three cut, two-coup, three-coup system. We  
16 divide the area into a three-coup system, three cutting  
17 system, harvesting, initial strip and then a few weeks  
18 later go to the strip and regenerate and you cut the  
19 second part and after that regeneration you cut the  
20 rest of it.

21                  Now, I fully realize that this is quite a  
22 departure from the normal operation again. Normal  
23 operation means cut, normal operation perhaps means  
24 that this kind of inconveniences may cause all kinds of  
25 problems coming back, and Mr. Martel was talking about

1       keep the roads in good shape so you can come back.

2                     So, yes, there is, but again this is a  
3       problem which we have to cope sooner or later if we are  
4       really concerned about rejuvenation or removal of our  
5       forest land in this way.

6                     Now, if you clearcut everything and plant  
7       it, it's one way to do it, but I think that there are  
8       not too many biological consideration given to that  
9       kind of prescription, harvesting prescription, and  
10      should be done in better way by this kind of gradual  
11      removal and gradual regeneration of the stands.

12                  Again, the question will arise  
13       automatically, how long is this going to take, the  
14       whole process of rejuvenation or removal and, again,  
15       that's a matter of semantics here and knowledge of the  
16       benefits of such approach, cutting, vis-a-vis the  
17       regeneration, and in this country is going to be  
18       dealing with that issue very frequently I hope from  
19       now.

20                  Q. Mr. Marek, could you describe exactly  
21       what this slide represents and what was done on this  
22       site?

23                  A. This was a tree cutting cycle, not  
24       far away from the area which I have described a few  
25       minutes ago on Domtar licence, not in Abitibi, it was

1       in the area of Camp 51 operation where we divided --  
2       this was a project done in 1967. We started with the  
3       tree cutting cycle system and we cut one, we waited to  
4       regenerate one and the other one and eventually the  
5       final coup was over here.

6                   I cannot see the results, perhaps I have  
7       slide there showing results of it. You have kind of a  
8       step like regeneration, which is one, the elementary,  
9       the first one is going to produce the oldest  
10      regeneration and then the second one is younger and the  
11      last one, of course, will be in the youngest  
12      regenerated area and then remove the total area  
13      progressively at a certain time.

14                  Q. This is slide 109.

15                  A. Okay. Let's go back to the first  
16      slide I have shown, these modified cuts way back in  
17      60's or very early 60's. I was talking to you about  
18      "proper site preparation" and proper site preparation I  
19      described as a mixing and I realize fully that perhaps  
20      this is not the ultimate prescription and there are  
21      some disadvantages to it by mixing, nutrient losses.  
22      Let's see the results of it after one or two or three  
23      years and you can see that these sites treated this way  
24      produce very healthy, young regeneration of black  
25      spruce.

1                   This has been mixed between mineral soil  
2       and the AH layer, and by AH layer I mean the fully  
3       decomposed layer on the top of the mineral soil; very  
4       rich material, usually dark in colour. Mix it up with  
5       mineral soil and then immediately the site rejuvenate  
6       itself very quickly. The feather mosses, that's a  
7       second generation of feather mosses, invades the area  
8       very quickly, gets established and in other vegetation  
9       here, in this case, and you can see these are  
10      three-year-old maturation, some are them are perhaps  
11      only two years. This is very nice growing black spruce  
12      back again where it was before.

13                  I would like to say a few words about it  
14      because I said it comes back as it was before. My aim,  
15      since I came to Canada, was to learn from the nature  
16      because I didn't have the resources, I had to learn,  
17      and the nature showed me very clearly that the  
18      biological aspect of sites which happen in the humus  
19      layer are of most importance.

20                  I looked at the burns, looked at these  
21      areas which were burned or regenerated, then I  
22      prescribed certain techniques here which, to my  
23      knowledge, was closest to the nature. I don't  
24      duplicate it, but I get close, as much as I know, and  
25      this is proof of it, that the site which was harvested

1 come back quickly not only in the nutrient cycling  
2 itself, Madam Chair - nutrient cycling is only part of  
3 one of the fluxes in the ecosystem dynamics - but also  
4 the other vegetation moved along with it.

5 I mean, I could have planted this area  
6 very quickly and I did it on thousands of hectares. My  
7 plantations are well known throughout the world, but  
8 here I only had one choice. I didn't want to go in and  
9 plant them here. I said, nature can do it for me, help  
10 me out, and that's the result of it.

11 Next one, please.

12 Q. Now, I just want to clarify. I  
13 understand this represents regeneration on one of the  
14 sites that the Board saw in slide 101, the first slide  
15 of modified cutting; is that correct?

16 A. Well, we got into that when we saw  
17 the first modified cuts there.

18 Q. It's from one of the previous slides  
19 demonstrating modified cut?

20 A. That's right.

21 Q. All right. Next slide.

22 A. Which slide is this now?

23 Q. This is now slide 110?

24 A. Okay. This is -- again, goes back.  
25 Let's look at that first -- no, pardon me, it's a

1 different area. One of the first strip cuts -- as a  
2 matter of fact, this is a result of slide showing the  
3 site preparation. Remember, I showed you this churned  
4 up forest floor there and those -- this is what the  
5 slide showed. I think it was ten years later. I don't  
6 want to try and quantify it here.

7 What slide is that again, madam?

8 Q. This is slide 101, natural  
9 regeneration, Lake Nipigon Forest, seven years after  
10 strip cutting.

11 A. Yes, seven years after strip cutting.

12 Q. Photo taken 1969.

13 A. Obviously you can see the area  
14 growth. Now, again, look at these things as a dynamic  
15 process, please. I'm not trying to say that that  
16 plantation is growing two feet a year now because it  
17 has been damaged by budworm, too, and so on, but this  
18 is the kind of sequence of slides I had taken and that  
19 plantation -- pardon me, that natural regeneration on  
20 black spruces was very successful and you can see it on  
21 the aerial growth on the black spruce trees.

22 So you don't -- I may stress here, again,  
23 Madam Chair, is the fact that lots of people nowadays  
24 in Canada and this is part of also the propaganda and  
25 public creation that only regeneration and only success

1 can be achieved if you plant trees.

2 It can be the Brampton Charter by Mr.  
3 Davis who said: Okay, I'm going to do something for  
4 forestry. I'm going to cut one tree and plant two  
5 trees. I don't know if you remember that Charter, but  
6 I do very well. It was right at the bottom of the  
7 Charter. We cut, we plant two trees or we will do it.

8 I think that's a very misleading thing.

9 Tree planting is an essential part of regeneration  
10 period and has to be done. The natural regeneration  
11 can do just as well and perhaps probably public should  
12 know that you don't have to have a pic and shovel or  
13 several shovel to regenerate our forests up north. So  
14 I think that's a very important thing to know.

15 Q. Next is slide 111.

16 A. As proof of it, I would like to show  
17 these conditions. Madam Chair, if somebody asked you  
18 to plant trees, black spruce trees here -- I'm sorry.  
19 If somebody take a tree to plant it and they want to  
20 tree plant this area, I would like to know how he put  
21 these trees in that terrible condition where the  
22 bedrock, right on the side of the bedrock that natural  
23 tree, in case this was natural seedling established in  
24 strip cutting, can do very well.

25 I bet you any money if you have that tree

1       planted over there, I don't think that tree would do as  
2       well and there are many reasons for this. So the  
3       advantage of black spruce management through the  
4       natural regeneration is "that you can establish a tree  
5       who cannot plant in there." Nature can do if you help  
6       nature out and this is the proof of it, and I can show  
7       you probably more slides later on.

8                     Q. Mr. Marek, what are the reasons that  
9       a planted tree, in your view, would not do as well in  
10      this area?

11                  A. It's probably most difficult. Let's  
12      say this is the bedrock and here you probably have a  
13      humus layer which is desiccated, based over the hard  
14      mineral soil there -- well, there may be some soil over  
15      here, but right here at the strata between bare rock,  
16      granitic bare rock, there's probably some few  
17      centimetres of desiccated moss which under clearcutting  
18      occur. Regardless if you do it in strip cuts or they  
19      have large strip cuts or wide strip cuts, you may get  
20      these conditions.

21                  But the microsites somehow were suitable  
22      for seed to get there, germinate and produce; whereas  
23      if you plant that thing, you will not have room to  
24      accommodate the roots of the system regardless of the  
25      spruces, regardless if it's transplant stock or if it's

1 container stock.

2 I imagine that it would be quite  
3 impossible to put bareroot stock, considering its size  
4 and bulkiness. Perhaps you can accommodate container  
5 there because container is only around three, four  
6 inches high, so you could probably put it in, but I am  
7 not quite sure that in this case that tree would  
8 survive.

9 Nature can do it because it has  
10 opportunity of seed to germinate on condition which  
11 really cannot be duplicated.

12 Q. The next slide is slide 112.

13 A. But here I am showing you only one  
14 tree, here is a whole bunch; in other words, quite a  
15 numerous occurrence of natural regeneration on what, on  
16 bare rock, granitic rock which is not very fertile; in  
17 other words, doesn't decompose very well, doesn't break  
18 down. Granitic rocks are extremely infertile rocks.

19 There are many others which have a true  
20 breakdown, can enrich the site and have a good input  
21 into the upper layer of the humus, but here in this  
22 case you have just bare rock, very thin humus layer,  
23 very thin humus layer - I think it's no more deeper  
24 than maybe two inches - and here is natural  
25 regeneration of black spruce doing very well, very

1       well. It's growing, not perhaps two foot in the air,  
2       but it grows, what, maybe six, eight inches, survive  
3       and may be part of the future stand.

4                  Now, duplicate this in tree planting, I  
5       challenge everybody, you plant tree seedling, see  
6       what's going to happen. Matter of fact the whole area  
7       has been clearcut and just a kind of belt was left on  
8       this side of the picture there leaving this condition  
9       where the natural regeneration could do very well.

10                 So it's not a unique case where, you  
11       know, it can be done on a broad scale, large area and  
12       the condition unsuitable, at least to my knowledge, for  
13       any artificial regeneration.

14                 Q. The next is slide 113 which is the  
15       result of natural regeneration from the 1962 strip  
16       cutting--

17                 A. That's right.

18                 Q. --spacing you saw on slide 105, Madam  
19       Chair, and the photo was taken 1986.

20                 A. This is a second effort I have done  
21       on St. Lawrence licence or presently the Lake Nipigon  
22       Forest way back in -- my first efforts were right in  
23       '59 and '60 but this was 1962, and it's presently  
24       marked as a seed production area by MNR.

25                 And probably some of you going to ask:

1 How come there is such uniformity? And the answer to  
2 it is very simple, on these sites - I'm quoting  
3 somebody else's assessment here, but I just say it - we  
4 started here original after one or two years with way  
5 over 15- or 20,000 seedlings. Well, I have let it grow  
6 then for a few years and then I said to myself: Well,  
7 let's space it, see what's going to happen.

8 So at the age of 10 of these natural  
9 regenerated black spruce stands I have prescribed  
10 spacing; in other words, I have removed certain  
11 amount -- number of trees from that, choosing just the  
12 best ones of course, it was selective kind of spacing  
13 there, I look at the form and I look at the growth and  
14 everything, the health of the tree, and we space it  
15 to -- I think was 10 by 10 or something, or 12 by 12  
16 spacing; in other words, we made a plantation out of  
17 it. That's what it look like now, it's just like a  
18 plantation. Only we didn't plant the tree, we let it  
19 as a result of the natural regeneration.

20 Perhaps one point I like to stress here  
21 and that is the fertilization, and I was very much  
22 involved in early fertilization trials in the area  
23 there because I was frequently challenged by people who  
24 are dominated by the thought that perhaps tree planting  
25 is a total answer and because, you know, in agriculture

1       we obviously had a very great success in planting, you  
2       know; but, on the other hand, we are always having  
3       problem, and we know very well that the agriculture  
4       lands across the lands is being examined due to the  
5       problem with soil removal, problem with pests and so  
6       on.

7                   So here I said: Let's see what's going  
8       to happen with fertilization, let's fertilize these  
9       young stands and we'll see the fertilization going to  
10      affect on the wood growth.

11                  So we did it on several occasions and one  
12       of the most interesting things what's happened here,  
13       right in this spot - and there were several plots  
14       fertilized in this area of 70 acres - that the results  
15       of fertilization was non-existent; in other words, we  
16       could not trace for the certain period of time the  
17       impact of fertilizer - and I am special talking now MBK  
18       elements - that when the transfer occur, the fertilizer  
19       went into the foliage and we were hoping that through  
20       this photosynthesity will return in the wood and we  
21       didn't find it at all. That luxury consumption we call  
22       stayed in the foliage for quite a long time and the  
23       transfer from there into the production of wood -  
24       which, as you know, happen very often and most of the  
25       time in agriculture - didn't happen.

1                   So with some of the scientists I know too  
2 well, we were saying: Well, how come this transfer does  
3 not occur, and immediately we came with a kind of green  
4 thumb thing that site has enough by its own production  
5 and does not need the addition of fertilizers.

6                   And I quite frequently compare it, you  
7 know, when you feel you need lots of fertilizer  
8 yourself and I'mam talking about, in this case, the  
9 vitamins for instance, so you can pump yourself full of  
10 vitamins and still wouldn't have an effect, matter of  
11 fact may have a deleterious effect.

12                  And very basically here same thing  
13 happen, that the tree if beside is functioning properly  
14 and supply its own desired requirement for nutrient,  
15 moisture, whatever it may be, say: Well, I don't know  
16 need it, I don't need it, I cannot work with that. So  
17 it leaves there and eventually, actually get into  
18 system back because, as you know, the foliage comes  
19 down and, again, how much this root system, how can  
20 this system absorb additional nutrition; just does not  
21 work.

22                  So while these studies are incomplete and  
23 there was lots of it, this kind of approach has been  
24 done in Europe for many, many years, it seems that many  
25 species can respond positively to fertilization under

1       certain condition. Jack pine is one of the species.  
2       We did lots of trials on it. The Norway spruce doesn't  
3       do it, the black spruce doesn't do it.

4                   So, again, here's basic difference  
5       between nutrition being supplied or forced by the  
6       ecosystem and specific trees being utilized or  
7       discarded by saying: No, we don't need it.

8                   So all for these who believe in  
9       fertilization of the forest, there is a good lesson to  
10      be learned; some species do respond, some don't. This  
11      fertilization here in these areas, and some others  
12      which I have done, did not work; in other words, the  
13      system is healthy, requires only so much of nutrition  
14      and when you add some of it, it just being ignored.

15                  Q. Mr. Marek, is this area now a seed  
16      production area for the Ministry?

17                  A. This area a seed production area,  
18      yeah, that's what it was done for. I space it, so I  
19      think that probably the benefits would be vital to  
20      producing a seed for the program and for MNR.

21                  Q. Could we have slide 114, please.

22                  A. Well, here we go to site preparation.  
23      What slide is it, please?

24                  Q. This is slide 114, and 114 and 115  
25      are described as proper and improper use of site

1 preparation, shear blading in the Clay Belt.

2                   A. Yes. I have already mentioned the  
3 benefits of "proper, good, satisfactory" - whatever, I  
4 check -- site preparation. Now, site preparation may  
5 produce good results and that is "the proper site  
6 preparation", or may not produce, depending on the  
7 tractor operation, depending on the efficiency,  
8 depending on many aspects, but here is a site which  
9 reminds me Clay Belt, and I think for that part of the  
10 country there and for their purposes this would be  
11 probably the best we can do.

12                  On the other hand though, and please show  
13 the next one, you can wind up with this. Now, while  
14 there may be some difference in site, all right; in  
15 other words, the other site was not as deep, as moist  
16 and so on, on a site like this if you do site  
17 preparation in this manner you are preparing not a good  
18 seedbed or good site preparation, period, you are  
19 making yourself a big problem; in other words, you are  
20 stepping into something you don't know what you will  
21 find out there.

22                  And you can see these furrows are now all  
23 ...this loose area is piled up there, and I don't know,  
24 I didn't see this area since. I am anxious to go see  
25 this summer or next year. But I would say this is a

1 mess and there is no answer to it probably until  
2 sometimes in future, some time this going to rectify --  
3 nature itself going to heal it, and one thing, guess  
4 again what are we going to do with it, Madam Chair.

5 Q. Mr. Marek is referring to slide 115  
6 by the way.

7 A. So we have to be extremely careful  
8 what kind of method of site preparation we are using.  
9 And may I say right now that the field is wide open for  
10 further research, further know-how and more qualitative  
11 sound approach to it.

12 Next one, please.

13 Q. This is now slide 116.

14 A. Site preparation is complex thing.  
15 Site preparation nature does frequently on its own in  
16 order to perpetuate the ecosystems or the specie, the  
17 biome.

18 This is how nature work in many  
19 instances. When stands get, of course, to the age  
20 where they start breaking up and the breakdown occurs  
21 through the windthrow, through the blowdown, the root  
22 system of black spruce get pushed over and that way  
23 preparing the site for regeneration of their own  
24 specie.

25 Here is a good example of an opening

1 which is - I don't know how - it may be quarter of acre  
2 or so, or half a acre, which is got to occupied  
3 presently by the advanced regeneration of black spruce  
4 and shows very clearly it was caused by blowdown, by  
5 exposing certain strata of the site or the forest  
6 floor. Quite frequently I have seen this.

7 On the other hand, I have frequently seen  
8 that during the logging operation this kind of blessing  
9 from the sky, just done by nature, is disregarded  
10 because we are efficient loggers, we -- instead of  
11 bypass these things, we go right through it; in other  
12 words, mowing it down, breaking it up, eventually you  
13 find out nothing there because everything has been  
14 disturbed by the...

15 Q. Mr. Marek, would you describe exactly  
16 what has occurred in this slide and what, in your view,  
17 should not be destroyed by harvesting?

18 A. What I said, bypass, it's probably --  
19 that this should be bypassed; in other words, care  
20 should be taken, protective measure taken and bypass it  
21 and preserve this natural regeneration which didn't  
22 cost us anything, it's not planted in regular rows,  
23 it's not planted to certain spacing which maybe  
24 Industry like to see everywhere, but it's healthy  
25 regeneration, it's a natural regeneration, it should be

1           protected, and it's not being protected.

2                         In order for economic reason, for  
3           efficiency of production, we go through these islands  
4           of regenerated stands and destroy them. Way back in  
5           50s this what occurred to me frequently, and I tried to  
6           take steps and I had many meeting with foremans and  
7           foresters in view of this destruction, and frequently I  
8           was successful, but I was successful that time because  
9           the technique or the technology or the harvesting  
10          system were different as they are right now.

11                       That time the buck saw was there and the  
12          cutter had to cut the trees, so quite frequently he  
13          said: Why should I cut those -- or destroy these  
14          little trees around the tree I am harvesting, leave it  
15          standing. And I will come back to it probably later on  
16          during my testimony or cross-examination.

17                       But this is impossible now because you  
18          have these machine there with wide tires and big -- so  
19          they just march through and what's happened that you  
20          destroy what you got there and then we go and plant  
21          these areas. So this has been probably planted too,  
22          destroyed, and then we put trees back by paying what  
23          \$400 an acre or something like that.

24                       So this is a kind of issue which is  
25          strictly protective kind of things which should be, and

1       we should be practice instead of destroying it.

2                     Next one, please. Q. Next is slide 117,  
3 modified cutting, in open area clearcuts, Lake Nipigon  
4 Forest, 1990.

5                     A. What bothers me very frequently that  
6 we do modify cutting for sake of modified cutting.  
7 Perhaps we will -- but on many operations which are  
8 perhaps praising themselves with, we are practising  
9 modified cutting, this cutting system - and here I am  
10 talking cutting system not silviculture system - is not  
11 done properly and by properly mean that that it's  
12 placed in spots or in areas unprotected, on top of the  
13 hills where probably the maximization of blowdown or  
14 interference by wind will be probably at maximum, and  
15 saying: Well, we modified cut.

16                     Bully for you! In this case you have  
17 quite large openings in the front of modified cut on  
18 the top of the watershed of the hill there, wide open,  
19 and I guarantee you that this area will be heavily  
20 damaged by the wind. The other thing, of course, is  
21 the trouble with exposure. I mean, on the top of the  
22 hill you obviously going to impact by solar radiation,  
23 drying out and extreme conditions which doesn't fit to  
24 the tolerance of black spruce as far as I know. And so  
25 these kind of thing in isolation bothers me very much

1 because in this case you might as well clearcut it and  
2 forget about it, or plant trees as they did over there,  
3 it was planted. Very poor success here.

4 So modified cutting is not a type of...  
5 but if it's done should be done properly with --  
6 considering some of these aspects of impact of the  
7 surrounding on the results of the modified cutting  
8 itself.

9 When I first started way back in 50s this  
10 modified cutting ideas, lots of people would say:  
11 European approach, Europeans do it but we cannot do it  
12 we have other ways to do it, and so on, and at that  
13 time it was doing nothing of course.

14 But I have to describe to you, Madam  
15 Chair, one experiment which happened on Kimberly Clark  
16 licence way back in 50s, - yeah, '59 I think - where  
17 forester took me, or bunch of foresters took me in the  
18 area where they modified cut, as they did it, and they  
19 said: Well, "it does not work". And this kind of  
20 term, "it does not work or it does work", is so  
21 irresponsibly used in forestry that I said: Okay, show  
22 me what does not work. Because in forestry that work  
23 is not just simple, you know, like, I bought a bunch of  
24 bananas and I ate them, it worked.

25 Here, as in other cases, no consideration

1 was given to the site. Did they modify cut it, they  
2 strip cutting with tremendously heavy slash cover.

3 Now, that slash was as deep as that  
4 picture where I show you previously there where that  
5 fellow was standing in that slash up to -- and said:  
6 Well, look at here, we have it now here for four or  
7 five years, there is no seedling on the ground, it does  
8 not work. I said: Well, look here, you know why it  
9 does not work, why it does not work? They said: Well,  
10 we try our best, we strip cut. Well there were heavy  
11 expectations from that "strip cutting" which I don't  
12 think is suited to the professional forester.

13 We should know that any of these methods  
14 of harvesting and follow-up silviculture should be done  
15 very carefully, should be done with great conscience.  
16 Now, if you leave the area unsuitable for germination  
17 and no microsites, no, well how do you expect this  
18 regeneration back.

19 So it does work if it is done properly;  
20 it does not work if it is done improperly and here is  
21 one of the things which is not done properly, you don't  
22 do strip cutting like this just for sake of strip  
23 cutting.

24 Q. Mr. Marek, how in your view should  
25 this area have been harvested?

1                   A. May I add that there is -- after two  
2       or three years now there is 40, 50 per cent  
3       regeneration success, I don't deny it, but 40 to 50 per  
4       cent success to me is not in black spruce.

5                   To answer the whole thing, that this  
6       whole area should have been clearcut, should have been  
7       managed in such a way that this whole black spruce area  
8       should have been just strip cutting or just modified  
9       cutting with different width of the strips perhaps  
10      with, consideration that you cannot have these little  
11      few acres of strip cutting on a hill there represent  
12      good regeneration effort or good cutting method.  
13      Simply that, that should have been all strip cut.

14                  Matter of fact this low lying area which  
15       was planted just last year should be all modified  
16       cutting because the results of regeneration here is a  
17       minimum, there's lots of mortality there because it's  
18       growing in, it's been mucked up and it's all -- all  
19       kind of problem.

20                  So why don't we use modified cutting  
21       right throughout the whole area. It's suitable to it  
22       and this way we just do very expensive tree planting  
23       with success of regeneration, I don't know what it may  
24       be, 30.

25                  So does it answer your question?

1                   Q. Thank you, yes.

2                   A. In other words, total context of  
3     area, I have to be concerned, total landscape, if it's  
4     occupied by black spruce and some of the area suitable  
5     or species suitable for, it should be done properly.

6                   Next one, please.

7                   Q. Next slide is 118, please.

8                   A. Well, here's a typical example which  
9     I would call proper, proper, "proper regeneration  
10   method" done on sites improperly suited to it, not  
11   normally suited to it.

12                  This was black spruce stands, right this  
13   way here. The forest soil has been eroded, the forest  
14   moss has been eroded, but little patches here between  
15   the rocks there is enough room to put the plant and  
16   they planted it to jack pine.

17                  Now, I don't know what jack pine going to  
18   look like in 10, 15, 20, 30 years because all of my  
19   experience would be that you may have a serious problem  
20   here with growth and other factors of risk next five,  
21   10, 15 years.

22                  I congratulate them at least do  
23   something, but this is one thing which I want  
24   appreciate eventually, when you get into lower scale  
25   quality appraisal you got to say: Well, we are doing

1 something good, we are doing something, but if it's not  
2 properly I question it, because this is not done  
3 properly.

4 Putting specie -- jack pine specie on  
5 very shallow granitic sites, removing of course through  
6 logging erosion and so on, here it is, you see, and  
7 then little niches here and there you put a few  
8 seedlings in it. That is forestry which is very  
9 expensive one and not justifiable because we really  
10 don't know what we are dealing with in a longer view on  
11 the success of these plantations.

12 So great, we planted trees. As I said,  
13 after all, we are planting trees, we are planting more  
14 trees than ever, but that is not a proper prescription,  
15 neither harvesting or silviculture.

16 Next one, please.

17 Q. Could I ask you to digress for a  
18 moment, Mr. Marek. Do you have any experience yourself  
19 in attempted site conversions?

20 A. Yes, I did quite a bit of it.

21 Q. And do you have some comments to make  
22 to the Board about that approach to silviculture?

23 A. Well, from a silviculture point of  
24 view any site conversion and by this I mean that you  
25 try to convert the site to other species.

1                   For instance, you have a stand or area  
2 which is occupied by nature by the historical  
3 succession by spruce, or by black spruce specifically  
4 here, and for reasons of put aside back or put trees on  
5 it again, you choose the agricultural approach where by  
6 help of fertilizer, by help of means introduced by man  
7 try to convert that in species which is suited to you.

8                   So in this case I suppose the licensee  
9 say: Well, I need -- I don't need the black spruce, I  
10 am perfectly happy with jack pine as long as, you know,  
11 my mill has the technology to use this kind of product  
12 because there are many mills in northern Ontario they  
13 are still preferring spruce, still preferring spruce  
14 for reasons of technology.

15                  Now, if you convert it to other specie  
16 and say: Okay, never mind spruce, I can use jack pine  
17 in my mill. You may have success in the time element  
18 of, say, dynamics of the stand itself; in other words,  
19 jack pine got established fairly well here, jack pine  
20 is growing in these little holes here which have some  
21 mineral soil and probably and may do very well for a  
22 few years, but as in any other conversion, the  
23 ecosystem convert to the other ecosystem, is that the  
24 risks involved are tremendous.

25                  That following the line of predictability

1 and following the dynamics of our lands, that at the  
2 early stages of the site development jack pine may do  
3 very well or black spruce may do very well on the other  
4 site, say, mixed wood conversion and so on, but it's  
5 very clear to me after being 40 years here - and, of  
6 course, do not count the years I spent in Europe - that  
7 these kind of conversions are very risky enterprises.

8 That risk may step in and completely wipe  
9 out through insect, blowdown, to many other factor  
10 which we don't even know what, for instance,  
11 productivity of the site, the nutrient cycling and so  
12 on, that it may happen that eventually this site will  
13 not be growing and trees damaged by these risks and  
14 eventually the economics and the whole success will be  
15 minimized.

16 And this is a good example of it. We put  
17 jack pine in - and jack pine is growing very well, I  
18 like it myself - I have looked at the same area in my  
19 own plantation and I said: Well, I have no problem, no  
20 problem, but watch out, one of these days you may come  
21 up there and you have all kind of problems which one  
22 does not anticipate.

23 This may happen once in 20 years, it may  
24 happen next day matter of fact, it may happen in 200  
25 years, but it comes.

1                   Next one, please.

2                   Q. Now, just one last question on this  
3         subject, Mr. Marek. I take it from your comments that  
4         you have yourself initiated some site conversion --  
5         species converse projects.

6                   A. Yeah.

7                   Q. Is it your view now that if you were  
8         managing plantations now, would you continue to use  
9         species conversion or not?

10                  A. There are areas to do it, there are  
11         areas not to do it; there are specie to do it with,  
12         there are species not to do it with.

13                  My own experience is that in many areas,  
14         if you embark on specie and site conversion, you have  
15         to - and I deal with this issue in my testimony - you  
16         have got to have a pretty well, or you have to consider  
17         very well the risks and to avoid these risks you have  
18         to be knowledgeable about some of the timing of these  
19         risks, you have to be knowledgeable about the steady  
20         observation -- which develops through steady  
21         observation.

22                  In other words, may I point out this, if  
23         you are going to do this kind of thing on areas where  
24         you are going to appear on the scenes every five or 10  
25         or 15 years and going to look at it and say: Well,

1 it's all right now and then go home and take your --  
2 put your rubber boots behind the chimney there and say:  
3 That's going to be okay forever, my contention is that  
4 this cannot be done.

5 In other words, you must follow  
6 practically observation of these condition as  
7 frequently as possible, as qualitatively as possible;  
8 in other words, so you can take this stand, to  
9 eliminate or prevent this, and I feel that our forest  
10 management right now as practised does not pay enough  
11 attention, due to the fact that we haven't got too many  
12 foresters, we haven't got very young foresters growing  
13 up to learn these things, we have technicians who line  
14 of responsibility perhaps is not keep their eyes all  
15 the time and watch these problems as they develop and;  
16 in other words, that we are still embarking right now  
17 on very kind of extensive - and please do understand  
18 what I mean by extensive - kind of observation and very  
19 extensive input into the protective aspect of our  
20 practices.

21 You cannot practise forestry just seeing  
22 these once every once in a while and say: Well,  
23 linearly speaking or speaking as kind of  
24 predeterministic way: Well, I plant it, it looks okay  
25 today, it's going to be that way forever. It does not

1 work in forestry, Madam Chair.

2 Q. Mr. Marek, you have indicated  
3 numerous times that where there has been a black spruce  
4 stand naturally that it's your view that we should  
5 attempt to regenerate a black spruce stand on that  
6 site.

7 Is it your view that the regeneration of  
8 the original species entails usually less risk than a  
9 species conversion?

10 A. Correct.

11 Q. Can we have the next slide, please.  
12 This is now slide 119.

13 A. Back to the strip cutting. This  
14 picture was taken right in the vicinity of previous  
15 slide. You can see the strips which were left  
16 standing, they damaged by windthrow, and I mean, what's  
17 new, if you expose these areas of standing timber to  
18 the blowdown or to the windstorm, immediately you are  
19 going to have a problem.

20 But what really matters here is that we  
21 can prevent this kind of damage. This damage of course  
22 will not only move into the farther up next year, next  
23 windstorm going to take the other patch with it, and  
24 then eventually when the time comes and say: Well,  
25 let's harvest this thing and regenerate these strips

1 which were left standing, Industry going to say: We  
2 cannot do it because we haven't got the technique to do  
3 it, we haven't got -- say, there is a safety factor  
4 involved.

5                   The technology of harvesting blowdown  
6 and, matter of fact, any damage is surprisingly  
7 minimal. The interest of Industry is to cut standing  
8 timber, but when it comes down to damaged timber,  
9 immediately there are many excuses not to do so. They  
10 are indulging in this kind of perception that perhaps  
11 our timber going to last forever and if there is  
12 something damaged perhaps somebody else can do it for  
13 them.

14                  And I think that it's time that we start  
15 seriously looking of inventing new technologies, new  
16 equipment which will be dealing with this issue. We  
17 have large storms coming through northern Ontario,  
18 hurricane-like storms, twisters, damaging large areas  
19 and like this, nobody wants to harvest it because there  
20 is no way to do it, and expensive way to do it, no safe  
21 way to do it, so what are you going to do with it, hope  
22 that nature somehow I suppose provide an answer to it?

23                  Let's prevent these things, No. 1; No. 2,  
24 if it's happened, deal with it using technologies or  
25 equipment which will be able to prevent, and this is

1       actually waste, there is an aspect of waste here.  
2       Nature usually doesn't be forced into and taken waste  
3       too.

4                   Next one, please.

5                   Q. The next slide is slide 121.

6                   A. Yeah. This effect of chemical  
7       tending to relieve black spruce regeneration changes in  
8       site forest floor. No difference in forest floor, no  
9       difference in forest floor and subsequent vegetation  
10      cover. Has been done in -- I have looked at this in  
11      Clay Belt and this is a natural regeneration of black  
12      spruce, it's from seeds, it's very little layers here  
13      which the seed germinated in this forest floor, here's  
14      the sphagnum, and does very well.

15                  What I must prepare you here that this  
16      was on the edge of the larger cut-over area which was  
17      sprayed with chemicals to release these black spruce  
18      from this mess, and that is the alder. The alder is a  
19      brush species which occupy frequently certain sites and  
20      can really occupy or capture the site, thus preventing  
21      black spruce to grow through it.

22                  So this is a little spot and here with  
23      a -- continue with next slide, can I have that, please.

24                  Q. Could I just ask you some more  
25      questions about this one first.

1                   A. Okay.

2                   Q. What type of moss do we see on the  
3 forest floor?

4                   A. I said already, Madam, this is  
5 sphagnum moss.

6                   Q. And what type of site does that  
7 indicate then?

8                   A. This is wet site in Clay Belt. In  
9 other words, there's quite prominent layer of organic  
10 material and below you have clay, so it's a typical wet  
11 site in Clay Belt.

12                  Q. All right. And the next slide which  
13 is slide 122, represents what, please?

14                  A. Okay. This is right in the  
15 neighbourhood where the chemical was used, released  
16 that little black spruce which I described right here,  
17 it's only few feet from here.

18                  Look there what's happened, we have  
19 eliminated the competition, the alder disappeared  
20 because it was treated chemically and defoliated very  
21 quickly; matter of fact, the whole stand was destructed  
22 because the stems are dry, dead.

23                  But look at the impact on the forest  
24 floor, the forest floor, it was striking there, instead  
25 of having done release black spruce here - and this was

1       done in sequence I think in two years or could have  
2       been three years, I am not quite sure here - but  
3       anyway, the black spruce just disappear.

4                   And there are two options of course, one  
5       is that it was too late for that black spruce to  
6       recover, but the other thing which I have documented  
7       later on after -- I look at this and we thought, there  
8       was several other foresters with me on this, we said to  
9       myself what's happened to that black spruce, I cannot  
10      find any.

11                  And could I see the next slide, please.

12                  Q. This is now 123.

13                  A. Here we have found, we have found  
14       that completely new generation of floristic component  
15       of the floor took over. On a swampy site, call it  
16       swampy site, wet site, specie like fireweed which is an  
17       indicator of dryness or dry site, preferably not swamp  
18       site, definitely not; start appearing as a floristic  
19       component on the site. And we have found several black  
20       spruce that just were there dry out, so immediately,  
21       what was the purpose of this spray? This may have been  
22       a spray which was done experimental, I don't know, but  
23       it was -- well, I would say maybe 15, 20 hectares of  
24       this condition.

25                  By removing alder, we have completely

1        ignored the fact that after the site was clearcut, the  
2        rise of water table took place, black spruce was  
3        established there and should have been doing fairly for  
4        a few years. Then we hit it with this herbicide,  
5        completely changing the environment and condition; in  
6        other words, we exposed it completely to the soil  
7        radiation, drying out. Immediately the upper stratas  
8        on the forest humus change and opportunity species  
9        moved in, striving on a condition which were just  
10      different four years ago. And, hence, we have fireweed  
11      doing very well.

12                  We found raspberries here, we found  
13        strawberries here, everything was adjusting. The old  
14        vegetation was adjusting to a new ball game, Madam  
15        Chair, which is called site preparation. We changed  
16        that site, at least the top strata, and the capturing  
17        of the site occurred by species we didn't want to have  
18        there. We want to have spruce.

19                  So the question is, to release a site or  
20        to help species, primary species, which we like to  
21        establish has to be adjusted to the total dynamics of  
22        the system which, in this case, turn against us as  
23        foresters by disrupting the black spruce dynamics which  
24        are, again, based on a condition of the forest floor as  
25        being presented in this three or four slides.

1                   This happens very quickly. It's not only  
2                   happened in this case, but it happened very frequently  
3                   in other areas where by controlling one element, in  
4                   this case the competition of alder, we are introducing  
5                   other elements which may be just as bad or worse.

6                   Here comes the forester role that he got  
7                   to anticipate these things, he got to thought of these  
8                   things because he got to make very critical  
9                   prescriptions. He's got to know this may happen and  
10                  act accordingly. Okay.

11                  MS. SWENARCHUK: Thank you. I think  
12                  this is an appropriate time to break for lunch.

13                  MADAM CHAIR: The Board will be back at  
14                  1:30.

15                  MS. SWENARCHUK: Thank you.

16                  ---Luncheon recess taken at 12:05 p.m.

17                  ---On resuming at 1:35 p.m.

18                  MADAM CHAIR: Please be seated.

19                  THE WITNESS: Madam Chair, in the  
20                  previous pictures I was trying to show you the changes  
21                  which happen due to the moisture changes in the forest  
22                  floor.

23                  In this case, it was changed upwards; in  
24                  other words, the presence of moisture increased after  
25                  harvesting and then, of course, eventually changes and

1 you can see the deficiency of the moisture on some of  
2 these dry forest floor after interference by man using  
3 the herbicide spraying or simply to leave it to the  
4 nature, which eventually is going to stabilize it more  
5 level, dry -- leaving the upper strata of the humus  
6 fairly dry, thus encouraging the species to invade it  
7 it or occupy the sites previously occupied by other  
8 species. That's very important because the black  
9 spruce regeneration is being affected that way one way  
10 or the other.

11 I think I'm going to elaborate on this  
12 more in detail later on.

13 MS. SWENARCHUK: Q. We are now moving to  
14 a new subject area. This is slide 125 and the heading  
15 for the following sequence of slides is the  
16 establishment of aspen in lowlands and this is  
17 described as the Spruce River Forest, 1988,  
18 approximately 60 miles north of Thunder Bay in the  
19 vicinity of Camp 303.

20 Would you describe what this slide  
21 indicates, Mr. Marek?

22 A. Again, it deals with the changes in  
23 the upper strata of the forest floor, changes which  
24 allow competition or occupation of the site by species  
25 that we as a forester don't like to see. We like to

1 see primary species on the site, we like to see  
2 spruces, jack pine, but in many instances the result of  
3 our activities, our disturbances is complicated by  
4 invastion, occupancy, capturing of the site by species  
5 as trembling aspen or poplar. Trembling aspen and  
6 poplar is synonymous.

7 In this case, the invasion of poplar  
8 occurred by seed. For many years, the forester in the  
9 boreal forest thought that the only way trembling aspen  
10 can perpetuate itself or regenerate itself is by  
11 suckering. By suckering -- you probably know what that  
12 is. A new root system is able to produce suckers.

13 This phenomena of seeding occur on sites  
14 which are heavily disturbed not only by clearcutting or  
15 harvesting, but also by site preparation. The site  
16 preparation again can create a condition in the forest  
17 soil which encourages the capturing of the site by seed  
18 coming from the seed source, and that is tending poplar  
19 left over on a cout-over site for primary species.

20 I guess you remember a site where the  
21 area was cut and I was counting the standing trees of  
22 poplar bypassed by company because, first of all, there  
23 was no demand for the poplar or perhaps the industry  
24 could not negotiate proper contact with other industry  
25 in order -- in poplar industry or, say, veneer industry

1 to utilize these trees.

2 So results may be something like this  
3 where the site is captured by the poplar from the  
4 standing seed source and compete, of course, very  
5 prolifically, very generously with the established  
6 primary species if it's by planting or by seeding  
7 seeding.

8 This, to me, is something which perhaps  
9 we should take a look at because use of herbicides and  
10 chemical in the forest is being attacked quite severely  
11 by a segment of our society accusing foresters to use  
12 discriminantly herbicides or pesticides or chemicals  
13 and try to avoid or minimize these kind of occurrences.

14 One thing, of course, which could be  
15 minimized and affect our problem with trembling aspen  
16 is simply not to leave seed trees standing; in other  
17 words, during the cutting operation, if we are going to  
18 go with clearcutting, clearcut harvesting, let's cut  
19 the seed source away or utilize it.

20 Of course the other approach would be  
21 that perhaps under certain condition, and here I'm  
22 talking very much in a general nature because these  
23 occurrences are very specific to specific sites in the  
24 boreal forest, that perhaps we can minimize, at least  
25 on black spruce sites, and that's what I'm dealing

1 mainly here today with, that we could by modified  
2 cutting somehow restrict the source of this invasion of  
3 trembling aspen through the wind currents, through the  
4 fact that trembling aspen seed is extremely light,  
5 extremely small and can be distributed through the wind  
6 currents over the large areas, for miles sometimes.

7                         Restricting their seed source, of course,  
8 could mean that we could restrict their reach and  
9 proliferation of these species, and in some cases of  
10 course, as far as suckers are concerned, we could  
11 minimize it also by restricting the area by area of  
12 cutting or disturbance by sheer size.

13                         Now, when you cut in strips or when you  
14 cut partially the stands, obviously to some degree you  
15 are going to eliminate the spread of trembling aspen  
16 because there will be obstacle in the area by these  
17 remaining stands or strips or patches or whatever it  
18 may be. So that's a second thing.

19                         I quite often think that there will be  
20 always areas where the problem of trembling aspen and  
21 competition in general will have to be dealt with if we  
22 talk about production of intensive managed areas where  
23 public will be fully aware of the priority or the  
24 primary objective of our timber management.

25                         In other words, when are we going to tell

1 to the public, that yes, these are the areas where we  
2 tried to establish pure spruce or jack pine, black  
3 spruce or white spruce, whatever it may be, primary  
4 species. Then I think that the management should come  
5 forward straight and say: Look, here is what we want  
6 to do for a reason as urgency supply to the mill, the  
7 productivity of the area and many, many different  
8 things, and then go to the public and say: In order to  
9 have white spruce, black spruce, jack pine, pure  
10 stands, planted or established, we need certain means  
11 of protecting this growth from competition.

12 I don't think I should talk about this  
13 problem now. I'm going to deal with it later on, but  
14 one of the main tools a forester should have to protect  
15 the established primary species from competition like  
16 this is, in my mind, the cutting practices which will  
17 eliminate large area cutting, large area clearcuts  
18 which, as you know, in the boreal forest may amount to  
19 square miles of land with these seed trees here and  
20 there. Well, that would be a first step, Madam Chair.

21 Next one, please.

22 Q. This is now slide 126.

23 A. The cut-over area is especially  
24 subjected to large area clearcutting, large disturbance  
25 by removing all primary species and lead sometimes to

1 extremely weird combination of establishment of other  
2 species, including trembling aspen, spruce, the other  
3 hardwood species, all mixture of all kind of species  
4 which got established against the old principles of  
5 previous dynamics of stands under the condition of wild  
6 fire.

7 Here you have really funny neighbours,  
8 you've got willows there, you've got trembling aspen  
9 growing vigorously, here's the black spruce, here is I  
10 think some other species, I don't know if it's willow  
11 or june berry or something, all kind of species which  
12 invaded the disturbed area by cutting, harvesting,  
13 because the created conditions which indeed accompanied  
14 these strange bed fellows and by bed fellows is a  
15 combination of species which under a fire condition,  
16 under the disturbance of wild fire, will probably never  
17 occur.

18 I'm generalizing. I think in many  
19 instances this is the case, that it's never going to  
20 occur, appear, if wild fire would have gone through.  
21 Wild fire would have probably got these species back  
22 which is called black spruce in such a number that they  
23 would grow, but here we changed the condition.

24 All of a sudden the poplar which never  
25 been here before -- this is an organic site, these are

1       the sites which have a very pronounced layer of organic  
2       material, very high moisture levels, usually pure black  
3       spruce and here comes the poplar saying, here I am and  
4       I'm doing well. So, in other words, we have changed  
5       that cycle in favour of these invaders, condition for  
6       these invaders, and the result is that in order to get  
7       black spruce back as a primary species, as a future  
8       stand, we have to cope with all the competition which  
9       arrives here.

10                  Now, things are going to become so  
11                  interesting -- the next slide shows, please.

12                  Q. This is now slide 127.

13                  A. This is a lowland, we call it swamp  
14       up north, swampy area, wet during the establishment  
15       of -- during the life of the black spruce and here all  
16       of a sudden -- see this is all black spruce slash here  
17       from full-tree logging and here comes marvelously  
18       growing trembling aspen and I don't think aspen was  
19       there every before.

20                  In other words, we changed the  
21       groundrules of nature by modifying these conditions in  
22       such a way that completely new cover, new trees appear  
23       and seems to do it very well. And the reason the  
24       trembling aspen get established here in great numbers,  
25       as you see it - this is part of the large area that's

1        taken over completely by aspen - that the regimes of  
2        the ecosystem, the regimes were turned upside down,  
3        that trembling aspen find niches to get established  
4        and grow very prolifically.

5                Now, here is how this happened. Look at  
6        here. Here is a cut-over which is occupied by alder.  
7        Obviously, that alder is indicator of the wet condition  
8        and those conditions were very well -- it's a low lying  
9        area, large outwash, I would say fluvial outwash, water  
10      got up after clearcutting, it dries off a little bit  
11      later on and all of a sudden poplar appears.

12               So it's our disturbance and disturbance  
13        caused by the man interference that we are faced with  
14        this problem. Of course the answer will be: Well, you  
15        sprayed it and plant trees and whatever, but the shear  
16        problem is that we allow these conditions to change in  
17        our cutting practices and allow poplar to move in and  
18        then, of course, we use herbicides and all kind of  
19        other things. So, in other words, we are making it a  
20        very, very complex duty.

21               Next one, please.

22               Q. There is no slide 128, so we will be  
23        looking at slide 129. The heading subject matter of  
24        the next series of slides is the importance of  
25        disturbance in the determination of vegetation cover

1 and now we have slide 129.

2 A. This is, of course, again black  
3 spruce site. You can see the residual stand left  
4 behind. That's cut now, though. This slide shows very  
5 clearly that we are replacing black spruce by jack pine  
6 wherever we can plant trees and, indeed, there was  
7 enough soil here, all kind of circumstances where you  
8 can plant trees, so we converted it.

9 Of course, in heavy disturbed area, which  
10 you have seen in slides before, they were mucked up and  
11 rutted, and heavily affected area by logging, stay out  
12 of production for quite a while.

13 So these plantations are seven years old  
14 and here black spruce cannot even get in, so you have  
15 the successional stage due to the rise of the water  
16 table still hindering production of any black spruce  
17 which was here before. These are very normal  
18 happenings right across the boreal forest and typify,  
19 actually, our approach to normal practices, normal  
20 practices.

21 There was black spruce there. Now we are  
22 trying to get jack pine where we can and the areas  
23 which were mucked up heavily or disturbed so heavily,  
24 we just look at it and say -- the question that arises  
25 quite frequently, Madam Chair, is how much of this area

1       we can allow it to happen.

2                     And, as I mentioned, on the very shallow  
3       sites, remember these bedrocks sticking out, where I  
4       said: Well, this is a problem, how much area, what  
5       kind of percentage are we talking in the total scope of  
6       the boreal forest. It would be interesting to find  
7       out, it could be very interesting to find out.

8                     But here, obviously, there are three  
9       stages, black spruce natural regenerated by fire, man  
10      disturbed, plant jack pine and leave the heavily  
11      disturbed areas to the nature.

12                  Next one, please.

13                  Q. Before we move, Mr. Marek, based on  
14       your own observations in the boreal forest, do you have  
15       an estimate of the percentage of the land base, for  
16       example, in northcentral region and in northern region  
17       this is affected in this way?

18                  A. I do not have because it's impossible  
19       right now to make even a rough estimate of what it  
20       would be, but let me point out that just in areas which  
21       I'm very familiar with and scoping it or have observed  
22       it for, many, many years that on some licenses --  
23       again, depending on the topography, depending on site  
24       condition, we are dealing with substantial number of  
25       hectares.

1                   In some cutting blocks, and you have seen  
2       some of them, Madam Chairman, that it may amount -- and  
3       this may be shocker. In a square mile of area  
4       disturbed you may find 50 per cent of the total area  
5       going through this kind of process.

6                   Now, to tell overall what the percentage  
7       may be in northcentral region even, during my travels  
8       for the MNR when I was preparing the result -- or the  
9       assessment of presilvicultural treatment, I was  
10      surprised how much area we got. One of the things is  
11      that they are far away from the roads sometimes because  
12      when you have uplands where the roads -- these are  
13      roads, by the way, going through these uplands there,  
14      you don't see them because they are covered by the  
15      strip or area regenerated to jack pine.

16                  When you start walking through these  
17      areas; in other words, you start marching through these  
18      sites, then you find very frequently that these areas  
19      occur.

20                  No, I cannot guess. I think this is to  
21      ask for the MNR and Industry to assert these damages,  
22      to look at them in the size of area and say: Okay,  
23      here from the total production forest land we have so  
24      much of these kind of conditions which will affect the  
25      allowable cut eventually in 50 years, 60 years which

1 obviously is going to reduce our productive forest  
2 lands, availability of wood, availability of species  
3 like spruce, et cetera.

4 So it's a matter of common sense to me  
5 that the manager should be concentrating now on the one  
6 basic problem: What do we have really in our  
7 productive forest land, what is productive, what really  
8 is going to grow crops, what is unproductive and what  
9 is between productive and unproductive. What is he  
10 going to do? In other words, find out as best as we  
11 can what is the future of these failings. Just common  
12 sense. You have got to know what we have.

13 Next one, please.

14 Q. This is now slide 130.

15 A. What do we have? What do we have?  
16 In some area we have lots of Labrador tea. This is all  
17 old cut-over cut in 1955 before I even came up to the  
18 area around here.

19 Q. Mr. Marek, the slide list says a 1960  
20 cut-over. Would that be accurate?

21 A. 1960, okay. So I was there, but I  
22 don't remember that being cut. The fact is that black  
23 spruce was removed and competing species, in this case  
24 Labrador, completely took over the site.

25 The other question: How does this kind

1       of competition -- and I was talking previously about  
2       poplar competition, now I'm talking about herbaceous  
3       competition of species like Labrador tea and there are  
4       many others. How do they will really compete with  
5       spruce which is indigenous to that site.

15 Next one, please.

16 Q. Now, Mr. Marek, this slide according  
17 to your list was taken in 1960. Have you seen this  
18 site more recently?

19 A. Yes, I'm passing by, as a matter of  
20 fact, every time I go out.

21 Q. Can you describe what has happened on  
22 that site up to the present?

23                           A. It didn't change very much. The  
24       black spruce is growing gradually. See, there is still  
25       opening in that thick canopy of needle, so you have a

1       little hammock or opening in the mass of leaves, and  
2       flowers in this case, this a flower of ledum.

3                  From the others you will find that black  
4       spruce regeneration moves in sporadically, but it takes  
5       a long, long time and obviously keeps very efficiently  
6       the regeneration of black spruce so far. Once you have  
7       a mass of competition like, it's extremely difficult to  
8       bring black spruce back.

9                  Q. All right. The next is slide 131.

10                 A. Well, in Clay Belt the problem of  
11       course with water levels and the rise of water levels  
12       shows very nicely in proliferation of grasses and there  
13       are many grasses and many types of grasses which strive  
14       on this flooded condition, and then eventually when the  
15       water goes down after years, then again the other  
16       grasses move in which are more tolerant or less  
17       tolerant to certain site changes.

18                 It's, again, based by tolerancy to take  
19       these conditions and sometimes it's pretty difficult to  
20       put black spruce which is fairly tolerant to  
21       disturbance in general, but disturbance is so severe  
22       here that it's going to take a long time to get black  
23       spruce back.

24                 This is a typical cut-over. I think this  
25       was planted the year I was there. They tried to put

1 plants in.

2 Q. And what was the result of that, to  
3 your knowledge?

4 A. Well, I have to come back probably  
5 next year to take a look at what's going on there  
6 because right now -- this is a picture which was taken  
7 a few years back. Again, the dynamics I have to see.  
8 I'm not miracle, I'm not a crystal ball.

9 I know very well what may happen, but to  
10 state categorically here, Madam Chair, that this is  
11 exactly what happened and this is good black spruce  
12 coming up and good survival and wood canopy and wood  
13 competition of these grasses is still there, what it  
14 two or three years ago, gosh.

15 That's a one big problem we have, that we  
16 cannot -- due to the lack of interest, due to the lack  
17 of documentation on silviculture, we are just talking  
18 first baby steps in these kind of things. What's  
19 happened, what is going to happen? Obviously, we know  
20 lots of things happen, we know what may happen, but  
21 when, under which condition, with other causes  
22 following up we don't. Simple as that.

23 Q. The next slide is slide 132 described  
24 as a site shear bladed and planted to spruce.

25 A. Surely the manager when he clearcut

1       this area -- it's the Clay Belt, uplands Clay Belt, so  
2       we haven't got a problem with that black muck, but here  
3       several years back the manager used shear blading as  
4       site preparation for a planting. In other words, these  
5       were mixed wood sites with poplar, old poplar and here  
6       is poplar, birch. He said to himself: I'm going to  
7       convert this site into the new black spruce forest.

13 (indicating) He shear bladed this patch, left this  
14 standing, shear bladed here and I'm standing here in  
15 that shear bladed patch and planted in shear bladed  
16 sites, strips, to spruces and you can see them there.

17 There are some spruces here. (indicating)

Now, in the meantime of course, after a  
few years he planted the untreated area because there  
was lots of advanced regeneration there, there was some  
balsam with it, some there was but also some spruce  
with it. Anyway, he encouraged these untouched strips  
to grow, whereabouts in the strips right here the  
planted trees are not doing too well.

So perhaps, in this case, we recognize

1 very quickly that in some cases the protection of the  
2 advanced growth on this site may indeed be considered  
3 as a future crop. Instead of blading these up and  
4 blading these sites right here, for instance. If the  
5 composition is right, we should leave the advanced  
6 growth take over and, thus, saving us lots of money and  
7 effort.

8 Now, the protection of advanced growth,  
9 Madam Chair, has been an issue recently where lots of  
10 black spruce specialists and people feel that advanced  
11 black spruce -- advance growth of black spruce has a  
12 value in forestry and there is some effort made to  
13 protect it. This is not an issue to me because I, many  
14 years back, was advocating these kind of measures where  
15 you can take advantage of the already established  
16 regeneration, natural regeneration by advanced growth  
17 and protect them.

18 We don't get exactly what we want, but in  
19 some cases we get probably something which could  
20 compare to what we had before.

21 Next one, please.

22 MADAM CHAIR: Excuse me, Mr. Marek. The  
23 Board has received a considerable amount of evidence  
24 about the CLAAG system, careful logging around advanced  
25 growth, and do you think that that is -- have you

1       examined what the Ministry does with its CLAAG  
2       approach?

3                     THE WITNESS: Yes, I have looked at it.  
4       I think this is the first step in the right direction.

5                     What I would like to see is that CLAAG is  
6       not the last of the -- I would like to see CLAAG  
7       improved in such a way that the area will not be  
8       completely clearcut; in other words, we go again to  
9       modified cutting. I would like to see that CLAAG,  
10      which is now considered as a protective measure for  
11      advanced regeneration survival, is being improved in  
12      such a way that we can talk about seeding in and  
13      additional seeding.

14                   So beside the layers, layer origin  
15      spruce, we also get seed in it and that will not occur  
16      with CLAAG because many of these so-called CLAAG areas  
17      I have seen are leaving seed source which is of very  
18      dubious quality and, of course, in quantity. So my  
19      perception is, it's all right for the beginning, but we  
20      have to improve on it.

21                   The other thing is still damage of the  
22      machinery which is used and, again, here it is up to  
23      the operators to exercise their own will for  
24      improvement of the technique because you are dealing  
25      with heavy machinery. You are still dealing with this

1       large machine which manipulates the saws or the cutting  
2       equipment, and by moving it here and there and picking  
3       up this, you still do damage.

4                     The other thing is, what I've noticed  
5       frequently is that the the centre line where the  
6       machine is moving is very much exposes to all kind of  
7       debris; in other words, breakage, all kinds of improper  
8       kind of -- I wouldn't say compaction, but in compaction  
9       way I don't like to see.

10                  In many cases, compaction may be all  
11       right, in some cases it will be poor, depending on  
12       movement of equipment and so on. And I think that  
13       perhaps improvement in the vehicles themselves, the way  
14       they move, the way they are built; in other words, you  
15       may have it on wheels, you may have it on tracks and so  
16       on.

17                  The machinery which is being used in  
18       Sweden or Scandinavia are usually small machines. I  
19       understand there are some steps being taken to  
20       introduce these machines now in the Clay Belt and you  
21       can see they are doing a much better job there.

22                  So CLAAG, fine. It's a beginning of the  
23       new approach where we realize finally after so many  
24       years that we should not destroy something which is  
25       given to us -- well, in this case is given to us by

1 nature for nothing.

2 So, is that good?

3 MADAM CHAIR: Yes, thank you.

4 MS. SWENARCHUK: Q. The next series of  
5 slides deal with the issue of prescribed burning,  
6 and we have now slide 133 which is a prescribed fire  
7 line through Leduc Township, Geraldton District, 1965

8                           A. Yeah. I don't know if you had  
9 opportunity to see slides, but I just included it in my  
10 presentation to show just what prescribe burn looks  
11 like, fairly fluctuating, and there is big difference,  
12 of course, between prescribed burn or burn initiated by  
13 man and, of course, fire in the standing timber.

14 As you see, that kind of wood with quite  
15 amount of deposit, that slash on the ground is hot,  
16 seed trees here, poplar or birch. A certain  
17 prescription, of course, has been given to you by MNR -  
18 I won't go into it - but what I want to say here is  
19 this, that one must not identify burning by prescribed  
20 means and wild fire in the standing timber.

21 Can I have other slide, please.

22 Q. This is now slide 134.

23                           A. Yeah. Once the burning take off and  
24       if successful, after it's out you're going to find this  
25       condition, and that obviously is not comparable what

1 fire does in standing timber. You may have all kind of  
2 debris on the ground, you may have a heavy deposit of  
3 residue burn by prescribed burning because you haven't  
4 got these antennas here which can dump the residue in  
5 other area or close by.

6                   Here it's all on the ground, or most of  
7 it. It's usually very thick, very thick, and what's  
8 happened also here is the fact that this prescribed  
9 burn, as most of them, do not have an immediate  
10 rainfall which happen in most the other cases in  
11 burning natural condition; in other words, the burning  
12 in the standing timber.

13                  The input of moisture at the beginning  
14 of, beginning of new stage for seedling establishment  
15 or seed germination is completely different in  
16 prescribed burning. Many of my experiments start  
17 matter of fact with prescribed burn because I thought,  
18 in that time I was working out of Geraldton District,  
19 and I just was too anxious to get this burning issue,  
20 and I have initiated many fires, I was part of it, and  
21 the condition which I have found was quite different.

22                  Here in this case, for instance, I had  
23 instituted large seeding. I thought: Well, let's  
24 prepare the microsites here, get rid of that slash and  
25 seed hundred thousand seeds per acre or 30,000 seeds

1 per acre, and I made numerous efforts, Madam Chair, to  
2 regenerate this area by -- well, here a fait accompli,  
3 clearcut area, let's remove the slash as an inhibiting  
4 factors in regeneration and try from the beginning.

5 It doesn't work that way. This  
6 environment is extremely hostile environment. No. 1,  
7 it's dark - albino is something which everybody knows -  
8 when you have a dark area, of course, then you're going  
9 to have quite a heat on the site through the solar  
10 radiation.

11 The microsites, if there are any, usually  
12 occur in these kind of protective niches where the  
13 moisture can be conserved to some degree because here  
14 evapotranspiration processes are extremely high. So  
15 you have dry now, you haven't got, say, rain for next  
16 week or two, depending on the situation, but never  
17 happen really after; in other words, this fire is not  
18 put out by rain, which is usually in a fire in the  
19 standing timber, lots of moisture usually comes down,  
20 stays there.

21 So when you see these areas you usually  
22 find out that it does not work; in other words, it does  
23 not work because, again, we create condition which are  
24 not -- you may try to plant it, and here, of course,  
25 the benefits of prescribed burn are usually that you

1 remove the physical obstacle from the site, preparing  
2 the simple areas, the bare areas where you can put your  
3 trees and plant them. So that would be probably the  
4 scenario here, it was planted. I seeded it two or  
5 three times, the results were very discouraging, so we  
6 planted.

7 Next one, please.

8 Q. This is now slide 135.

9 A. This is after. Yeah, this is right  
10 in the neighbourhood there. It's not exactly the same,  
11 it's in neighbourhood which have lots of ledum there,  
12 you know. So anyway it was the same year, same time,  
13 and you can see even several years after you still got,  
14 after you burn it, little growth being established on  
15 these sites.

16 And then as well you have more moisture,  
17 like this trough here, you going to find some floristic  
18 regeneration or -- there are several grass species  
19 which were established but, in general, you're going to  
20 find it takes a long time for this cut-over burn by  
21 prescribed burning to start the dynamics of the  
22 regeneration of very opportunistic species.

23 It's always the problem to put the site  
24 back into production, and the indication I had it's  
25 going to take quite a few years here and this site will

1 come back and start really nutrient cycling as it  
2 should be.

3 Of course you can plant this site, you  
4 can plant it. And in this case, it didn't have a very  
5 good success because -- and that's going to be I  
6 think -- next slide, Ma'am. Could I have the next  
7 slide, please.

8 Q. This is now slide 136.

9 A. Yeah. This is a typical taste of  
10 prescribed burn where the moisture regime in this place  
11 are conducive to the growth because it's moist, there's  
12 lots of heat in that area, lots of warmth but here it's  
13 only area through microsite where plant getting  
14 established because there is a simple protection. It's  
15 a niche which immediately is occupied by this.

16 Vast area around it which is totally  
17 exposed is not regenerating itself to anything; in  
18 other words, it's dessicated, dried out for the feather  
19 mosses, scorched or burnt to some degree.

20 Next one, please. Next one.

21 Q. This is now slide 137.

22 A. Okay. Let's go then -- actually this  
23 is burn-over site, so the prescribed burn site. This  
24 is a site also which has been burned by prescribed burn  
25 and you can see that the colour -- by the colour of the

1       trees something is missing, the yellowish tinge, the  
2       chlorotic appearance is usually lack of nitrogen, not  
3       always, not always, but in most of the cases it appears  
4       to be that the site is not able to provide enough  
5       nitrogen to the trees and they turn yellowish in  
6       colour.

7                   And that I have found in many instances  
8       where I have experimented with this prescribed burn,  
9       many shallow site, shallow till over bedrock, or some  
10      of the effluvial sites, the nutritional capital has  
11      been or has declined due to the prescribed burn; in  
12      other words, there was severe volatization of the  
13      nitrogen, there was certain leaching at the same time  
14      and that site couldn't build up enough nitrogen to  
15      support healthy new growth of black spruce which was  
16      outplanted.

17                  This is area on Abitibi, Auden there. I  
18       initiated that fire way back, oh early 70's, and it's  
19       obvious that here the planted trees are lacking  
20       nitrogen and it's going to take probably quite a while  
21       til the crown closure occur here; in other words, when  
22       these branches of spruce will get closer, going to  
23       shade the ground, that this site will be able to  
24       produce enough nitrogen that the black spruce can  
25       barely offer.

1                   One of the things which - and perhaps I  
2       should say it right here, Madam Chair - that the crown  
3       closure play very important part in the rehabilitation  
4       or restoration of the site capability to function  
5       properly. The sooner we get crown closure here,  
6       shading, biological activity in the forest floor, the  
7       sooner we are going to have a normal growth here, and  
8       because black spruce is a specie which has a very  
9       narrow crown as compared to other species like jack  
10      pine or white spruce, narrow crowns are typical, very  
11      narrow crown. White spruce will be like this, black  
12      spruce going to grow go like this, the very narrow  
13      crown habit, that's going to take a long time.

14                   Therefore, in this case to establish  
15      stand -- black spruce stand, this kind of minimum  
16      stocking standard is just prolonging the problem of our  
17      good regeneration. The more trees we would have here,  
18      the quicker the crown closure up here, the quicker the  
19      rehabilitation of the forest floor will take place, the  
20      biology could turn over and set the nutrient cycling  
21      and the better we are with -- as far as the health of  
22      these trees.

23                   By wide spacing, so emphasized by  
24      economist and many forest manager, like they say:  
25      George, plant them, why? No, I think that that is very

1           misleading.

2           Q. I have a couple of questions, Mr.

3           Marek.

4           A. Go ahead.

5           Q. First of all, the reddish brown  
6         vegetation or colouring that we see--

7           A. Yeah.

8           Q. Yes. Can you just explain what that  
9         is, please.

10          A. Well, there are some grasses here  
11         which -- this picture was taken I think early spring or  
12         late in the fall, but the fact is that this secondary  
13         vegetation occupying these sites and that maybe grow, I  
14         think in this case cherries and all kind of very  
15         intolerant species.

16          Now, one problem I can point out right  
17         here, Madam Chair, that in this case it will be  
18         absolutely counterproductive to use herbicides for  
19         tending, it will be absolutely unrealistic to hope that  
20         by eliminating this competing vegetation, whatever it  
21         may be, we are going to improve the starters. No, we  
22         will do just opposite; in other words, by killing these  
23         willows, by killing the ground vegetation which may be  
24         of all kind of different species, we are eliminating  
25         one of the most important component, most important

1 component of the site productivity and well-being.

2                   And that will happen if you spray this  
3 area, you will find that usually you kill the  
4 vegetation here, just robbing of the total system of  
5 nutrients so required, so badly required in these  
6 cases.

7                   Q. Now, my next question, Mr. Marek, is  
8 that in the top, my left corner of the picture, we see  
9 what looks like a red tree. Could you describe --

10                  A. Well, that's a bad tree, that's a bad  
11 tree. It just turn red because it's dead and, in this  
12 case, I don't know what's happening because, again, our  
13 beloved armilaria melia there, or if it was some other  
14 cause. It could have been something. I'm not quite  
15 sure what's happened to that, but it's probably  
16 shoestring rot which quite frequently come back in  
17 these cut-overs from these half-wrecked stumps and  
18 start choking the root system of spruces.

19                  The burns in general are quite well-known  
20 to have a period of armilaria and other pathogens and  
21 very, very quickly because the whole ecosystem by  
22 harvesting -- or by this burning here, in this case  
23 both of them, is deprived, is weakened and give a  
24 chance for the other species to move in and do fairly  
25 well.

1                   So in many of these burns you will find  
2                   that shoestring rot is one of the fellows who causes  
3                   this mortality. It can not be serious, but in case you  
4                   manage plantation which only have 400 or 500 trees per  
5                   hectare or something like that, then every tree counts,  
6                   of course, and you can't afford.

7                   It's all right to have armilaria or have  
8                   haematobious, you know, and all these damaging factors  
9                   involving nitro regeneration which has two hundred  
10                  thousand trees, they have lots of choice there, but  
11                  when you have a plantation which has only at the  
12                  beginning, say, even thousand trees per hectare, then  
13                  you are talking about opening of the stand, opening by  
14                  the mortality, like here, it will be removed and that  
15                  going to affect your dynamics, development of the total  
16                  stand, and yields and, for that matter, the whole  
17                  process.

18                  Q. Do you have an opinion with regard to  
19                  the use of prescribed burn on nutritionally poor sites?

20                  A. No, no. Prescribed burn shouldn't be  
21                  used on poor nutritional site, under no circumstances.  
22                  Where it could be used in the rich sites, and I think  
23                  that what we should do before we start initiating any  
24                  prescribed burn, look at the total scope of the  
25                  landscape, and because landscape is changing and the

1 sites are not uniform, we have sometime change --  
2 drastic changes in the site, you know, few hundred feet  
3 of that kind of thing have a new pattern developing few  
4 hundred feet away.

5 So when we look at the prescribed area we  
6 have to take the total landscape. So, no, no  
7 prescribed burning under condition which has a poor  
8 nutritional base; in other words, the capital is --  
9 nutritional capital is missing, of course, it cause  
10 farther damage then, yes.

11 Q. The next slide is slide 138.

12 A. Individual trees, area has been  
13 prescribed burn, and -- oh, after quite a few years --  
14 what are the dates on this area?

15 Q. Area planted after prescribed burning  
16 1969, photo taken 1988.

17 A. Yeah. You can see -- after that  
18 period of time you can see the effect of nitrogen  
19 losses on this specific site and, again, you can see  
20 the yellowing of foliage, lack of nitrogen; in other  
21 words, the nitrogen from air which is organic nitrogen  
22 is not returned into the mineral nitrogen as nature  
23 does or should always do.

24 So the N03 is missing here. There's lots  
25 of NH4 here, lots of NH4 nitrogen, but that site cannot

1 convert it and mineralize it. So next one, please.

2 Q. The next slide is 139.

3 A. This is part of the risks, please,  
4 which I tried to convey to you, that we are risking by  
5 improper cutting by irresponsible cutting practices we  
6 are endangering the sites and the trees to many risks.

7 Now, here is a site which obviously have  
8 a clump of trees here which are, I think bark beetle  
9 there.

10 MR. FREIDIN: I'm sorry.

11 THE WITNESS: Bark bettle, bark bettle,  
12 and I just took it last year, last summer, and company  
13 who was conducting practices left that stand standing  
14 and leave it to the breeding or leave it to the  
15 beetles.

16 What they don't probably realize that  
17 these beetles from here go someplace else and there  
18 are -- while we are obviously interested in the sound  
19 timber, good timber, we disregard the risks by leaving  
20 timber subjected to the risk, in this case the bark  
21 bettle, to multiply and do whatever they wish.

22 Now, this is a poor practice. There's  
23 nothing protective about this. This never should be  
24 left standing, never.

25 Q. Mr. Marek, what's the problem with

1 leaving that stand standing?

2 A. What is the problem?

3 Q. What's the potential problem with it?

4 A. Oh, potential problem. The bark  
5 beetles, of course, as I say they don't stay here, they  
6 multiply and they spread over countryside and they may  
7 attack other stands which is only few metres away and  
8 you don't need usually cancer there you try to cure it,  
9 you try to take it out or treat it. Here we just leave  
10 in there hoping that the nature will I guess isolate  
11 these things and no damage will be done.

12 You can see it very often these cases  
13 where these stands is probably dry, it's not fully  
14 there is some green still in it, but obviously the  
15 company didn't see in their wisdom to harvest it,  
16 utilize it or destroy it or burn it or something just  
17 to get rid of it, not to leave it as breeding ground  
18 for the damage.

19 Q. The next slide is slide 140, natural  
20 regeneration of white and black spruce by seed tree  
21 method, Lake Nipigon Forest, 1969, photo taken 1990.

22 A. Yeah.

23 Q. Could you give us the history of this  
24 site please, Mr. Marek?

25 A. The history is that there are two

1 ways of course to establish new regeneration or  
2 rejuvenated stands or renew the forest, and one of  
3 course is by artificial means, the other one by natural  
4 means. And, in this case, you have a result of natural  
5 regeneration from seed source.

6                   Here is the big white spruce which was  
7 left standing. There was no representative at  
8 beginning of the experiment 1967 where I thought that  
9 perhaps by problem of tree planting I had and that  
10 problem is caused, that problem of course labour force,  
11 that problem in supervision and, of course, the supply  
12 of proper stock. I said: Well, let's try approach,  
13 which is quite frequently used in Europe with Norway  
14 spruce by seed tree method, and here is a good result  
15 of it.

16                   Site has to be cut of course, most of the  
17 spruce has been removed, there was a secondary cutting  
18 done by other companies to remove poplar and birch, in  
19 this case mainly birch, and it was site prepared and in  
20 seed years which is well between three and five years  
21 depending on -- regenerated site.

22                   One thing which, and the reason I brought  
23 it here is for purpose -- for one purpose, and that is,  
24 that when you want to achieve good, sound, new forest,  
25 you have to count on many, many things which will be

1 working against you, because after all you interfere  
2 with the dynamics of natural forest, you have to  
3 consider the surprises, and one thing which I always  
4 felt was very dangerous in the boreal forest bypassing  
5 trees like balsam fir, leave them standing not only for  
6 seed source but also for the purpose of -- because they  
7 do regenerate, balsam is one species which regenerate  
8 very prolifically, but also for the danger of being  
9 attacked by budworm.

10 And while I have already mentioned that  
11 many foresters argued many years back, and they are  
12 still arguing matter of fact that case now, that balsam  
13 is very cheap, effective regeneration, doesn't cost us  
14 anything, let it grow and we going to harvesting, just  
15 the opposite is the truth, it's a very dangerous and  
16 risky forest practice.

17 And here before I have treated this area  
18 I have noted quite a number of -- large number of  
19 balsam trees which were representative of the site  
20 before cutting; in other words, the advanced growth of  
21 balsam was very prolific, so thick matter of fact that  
22 in some cases I could hardly get through, thousands of  
23 stems per hectare, varying between small little things  
24 right down to size of a pole.

25 And I knew that I have to do something

1       with it, and in order to do -- effect, I had to take  
2       that balsam right off; in other words, what I have done  
3       here, is the site preparation tool was taking bulldozer  
4       after cutting was done and remove all balsam fir by  
5       scraping it off, piling it up, and I was planning that  
6       time to burn it but it didn't take place, I couldn't  
7       burn it for reason, I don't know, just -- so it was  
8       piled up and left to decompose itself and become part  
9       of the system.

10                  But you can see the beautiful  
11       regeneration of white and, to some degree, black spruce  
12       from few seed trees which were left also that  
13       regenerated and you see vigorous young white and black  
14       spruce stand without effort of planting, without the  
15       effort of more expensive treatment.

16                  The other thing which -- I visit this  
17       site as often as I can because my dream to go there and  
18       thin it out and proper spacing and establish kind of  
19       things which will really good -- show very well what  
20       one can do with the seed tree method which is  
21       frequently used in Scandinavia in their regeneration  
22       effort like Scotch pine regeneration and so on.

23                  But right now part of the boreal forest  
24       are subject to heavy damage by spruce budworm. I don't  
25       know how long that epidemic is going to last, I don't

1 know what the final results will be, but I assure you,  
2 miss, that in many instances it would mean that large  
3 areas of second growth which was established since we  
4 started operating up north, since 1930, '40, '50, will  
5 not survive or will be so heavily damaged that any  
6 prognostication towards the future yields and towards  
7 the future of these stands, areas - and we have several  
8 million hectares up north - is very uncertain. Some of  
9 it is already dead, some of it we tried to save by  
10 using pesticides.

11 It seems to me that many of these areas  
12 will be probably doomed and that means that our supply  
13 of coniferous fiber will be doomed with it.

14 Right around this area, matter of fact,  
15 Domtar was there this year cutting all young balsam of  
16 this size, and this is right in the middle of it, and I  
17 surely thought, surely thought that this area will be  
18 subjected to the balsam or the infestation of spruce  
19 budworm and this spruce budworm going to move in and  
20 going to have a hay day.

21 Well, just opposite happen, right around  
22 this area most of the balsam fir, including white  
23 spruce and even black spruce was heavily damaged,  
24 balsam was matter of fact completely wiped out, and  
25 this natural regeneration of white spruce makes these

1 black spruce here, this picture was taken this fall,  
2 yeah, towards fall last summer, there's hardly any  
3 effect on it.

4 Now, I haven't got an explanation for it,  
5 I cannot say it's because the natural regeneration,  
6 it's because there's hardly any balsam there, it's  
7 because -- there may be many other explanation, but the  
8 fact is that many arguments, many arguments in favour  
9 of natural regeneration throughout the world, Madam  
10 Chair, from Europe right I suppose in Canada, say that  
11 many natural stands are much more immune or better  
12 equipped, let's put it this way, to be least damage or  
13 target of risks and, in this case, we talked about  
14 spruce budworm.

15 Q. One last question from this slide,  
16 Mr. Marek. This slide depicts white spruce  
17 regeneration. Is there currently a large program of  
18 white spruce regeneration in the boreal forest?

19 A. I just can't quote the number. They  
20 talk about two per cent, over two per cent of natural  
21 regeneration or modified cutting.

22 Q. No, no, I'm referring to the species  
23 now, white spruce.

24 A. Not that I know of. I may be wrong,  
25 maybe some dedicated forester is involved in it and

1 maybe does it, but I'm not aware that this program is  
2 accepted. It's not mentioned in the spruce guidelines.

3 I think very vaguely there may be one  
4 sentence, but in general no, it's not because this  
5 requires more than just clearcut and plant or leave it.  
6 This requires -- they have to manipulate the condition,  
7 they have to prescribe things which perhaps are not in  
8 the kind of way they like to do things. It is much  
9 simpler to cut it.

10 It requires more. You have to remove all  
11 balsam. Don't forget it's a fairly complex thing. You  
12 have to scrape the balsam off, you have to prevent the  
13 balsam to be target of this budworm and also prevent  
14 the -- I don't know if it was stated previously, Madam  
15 Chair, but balsam fir is a species which is represented  
16 and has always been represented in the boreal forest,  
17 but with the prescription, with the harvesting  
18 practices, bypassing stands, old stands, lots of  
19 balsam, by allowing large percentage in the  
20 regeneration program as being part of the working  
21 group; for instance, spruce budworm may have only 40  
22 per cent spruce, the rest of it may be balsam fir.

23 So we have just challenged the whole  
24 strategies here of the nature by saying: Well, balsam  
25 is going to be all right, and I think that the

1       pathological rotation is quite well known. Balsam fir  
2       may live a long time, but in general when they get into  
3       the ages of 50, 60 years it is subjected to other  
4       pathogens like root rot and many others and the  
5       quality, of course, declines.

6                  Many industry people will not accept  
7       balsam period. Many people feel the once the stain is  
8       in, and by stain I mean discoloration of the wood  
9       itself, that the quality of the wood or the quality of  
10      the wood is not desirable in the mill.

11                 So many companies have a kind of dim view  
12       of these pathological rotations of balsam fir, but we  
13       still -- our system still allows balsam fir to  
14       perpetuate, balsam being part of this regeneration  
15       cycle, instead of saying once and forever we don't need  
16       balsam fir, we've have enough bad experience, let's get  
17       rid of it and keep it to a minimum.

18                 I hate like heck to really say what  
19       percentage of balsam we have in second growth in  
20       northern Ontario. There are many arguments saying that  
21       it's not beyond the kind of normal distribution of  
22       balsam fir, but my investigation of second growth  
23       cut-overs and these second growth stands are showing  
24       that proportion of balsam fir is just completely out of  
25       the reasonable numbers we need.

1                   MADAM CHAIR: Mr. Marek, one question  
2       about the stand. Are the stands surrounding it, which  
3       are infested by budworm--

4                   THE WITNESS: Right.

5                   MADAM CHAIR: --of fire origin or are  
6       they artificially regenerated?

7                   THE WITNESS: They are of fire origin.  
8       They are fire origin, but they are in the stage, Madam  
9       Chair, beyond 120, 140, 160 age class; in other words,  
10      fire didn't go through them. That's why we have this  
11      association, lots of balsam fir in our openings, as I  
12      showed before, and you have a unique condition and  
13      balsam just loves it and, of course, so does budworm,  
14      so does budworm.

15                  MADAM CHAIR: Shall we have a break now  
16       Ms. Swenarchuk?

17                  MS. SWENARCHUK: Fine.

18       ---Recess taken at 2:40 p.m.

19       ---On resuming at 3:10 p.m.

20                  MADAM CHAIR: Please be seated.

21                  MS. SWENARCHUK: Q. We are now  
22      commencing the section entitled risk management and  
23      forest stability and this will be slide 141, limestone  
24      jack pine plantation damaged by snow, 1984, planted  
25      1975.

1                   A. Madam Chair, from now on I'm going to  
2 talk frequently about a plantation which I have planned  
3 and implemented in Geraldton District. It was before  
4 before the reorganization in 1972, and during my  
5 activities with the MNR after '72 from the District of  
6 Nipigon.

7                   The reason I will show this, again, in  
8 order to prognosticate or to visualize some of the  
9 risks one has to go by the experience. One has to go  
10 back and examine some of these obvious impacts of risk  
11 on forest management. The term risk is very well  
12 documented and qualified in my presentation, in my  
13 writing there, but what is obvious is that while you  
14 get more intensified management of conifer species,  
15 you've got to be acutely aware of the risks, and the  
16 risks so far has not been evaluated properly in  
17 Ontario.

18                  Perhaps in some area like southern  
19 Ontario there is enough stands, older stands 30, 40,  
20 50, even 70, 80 year old stands where some of the risks  
21 become obvious and the managers were dealing with it  
22 for years. I never worked in southern Ontario, so I  
23 cannot say that I'm experienced on the red pine or  
24 white pine plantations, but up north where we are  
25 dealing with black spruce and jack pine and white

1 spruce, there is concern that possible risk is not  
2 fully realized as yet.

3                   Therefore, managers who get involved in  
4 the more intensive management by planting large area to  
5 this primary species perhaps are over-confident or  
6 over-optimistic about, say, results of the first few  
7 years.

8                   When I started this plantation way back  
9 in the 50's, I must admit with my European experience,  
10 which classifies risk as one of the most important  
11 aspects in forest management, I was not concerned  
12 either. I have to admit that I was preoccupied to  
13 establish these plantations and see them grow  
14 wholesome, but if somebody would have come to me and  
15 said: What do you say about the next 15, 20, 30 years,  
16 my answer would be like something like this, kind of  
17 very linear progression, I would say: Well, I have a  
18 got stocking, I have the species I want, it's growing  
19 fairly well because I measured the stocking first at  
20 five years, the assessment, and then I compared the  
21 growth and that was the kind of situation with me.

22                  I very reluctantly have listened to  
23 warnings of some of the Europeans who came up, some of  
24 the foresters who always remind me: Now, just a  
25 second, that's fine, they are doing very well, it looks

1 nice, but what about this, this, this. And my answer,  
2 Madam Chair, was arrogant, I said: Not in Canada, not  
3 in Canada. In Europe, yes, we have all kind of problem  
4 with wind, we have all kind of problem with that, but  
5 in Canada -- and one of the most stupid answers I ever  
6 gave was to my friend Mil Whitlak who said: George,  
7 one of these days you are going to get heavy snow, wet  
8 snow and your plantatio is going to have a problem.

9 I answered to this, I said: Mil, a  
10 friend of mine, I said: We haven't got a wet snow in  
11 Canada, we always have dry snow. And it went and then  
12 one day I woke up and I saw it from outside, this wet  
13 snow and I went down and it was a horror story.

14 And believe me or not, I never forget it  
15 because I don't have tears in my eyes frequently, but  
16 that time I stood there and I walked through this  
17 plantation, which I put so much effort into and so much  
18 dedication, and it was my plantations, and I had seen  
19 some of area which I didn't recognize. So it may  
20 happen here, too.

21 So when many people -- and it's too bad,  
22 Madam Chair, that you didn't come to the area when we  
23 had -- or FFT was planning the trip because I would  
24 have personally showed you this problem, and here you  
25 have to see only some of this problem on the screen.

1 Believe me or not, it hurts more when you see it  
2 outside than if you watch the slides.

3               Okay. So the risk could be considered by  
4 many agents and one of them, of course, is effect of  
5 snow on plantation and one of the interesting things,  
6 again, I may add here is that while many people, many  
7 foresters feel initially that the main problem or main  
8 concern should be at the beginning of these plantation,  
9 at the beginning of your reforestation effort; in other  
10 words, you go there, you have a good survival, you have  
11 lots of trees growing there and they look so nice and  
12 you say: It's going to be okay. It's going to be  
13 okay. We have a free to grow thing, free to grow.

14               One of the European literature which I  
15 have studied in Europe experienced one concern, that  
16 actually the greatest risks are not at the initial  
17 period of establishment or growth, the greatest risk,  
18 of course, by European experience is the moment or the  
19 time when plantations become pole size; in other words,  
20 pole -- you know what I mean by pole. Its diameter,  
21 DBH, that were, historically speaking, historically  
22 documented through that those types are more critical  
23 for the growing stand.

24               The damage could occur, of course, due to  
25 other sources; and that is, you may have a problem with

1       improper planting. Many of our plantations that are --  
2       which are being established presently have not proper  
3       understanding of proper root system development and  
4       proper strata, where to put the trees. Yes, there are  
5       some parameters, yes, there are some guidelines, but in  
6       general terms we still don't know what the maximum  
7       protection is and, at the same time, the danger of  
8       faulty planting.

9                   So you may have a plantation which  
10       eventually by itself is going to do down because the  
11       root system developed in one strata or one direction,  
12       whereas, as you know, the capability of the tree should  
13       be based on -- fairly well distributed around the  
14       perimeter of the root. So many of our root systems are  
15       going one way, the tree of course is going to go the  
16       other way by snow or by effect of wind and whatever.

17                  So in general terms when we talk about  
18       risk we are not talking about one risk, we are talking  
19       about many risks, many risks, which may -- one risk  
20       comes in and may be followed up by many other risks  
21       which we follow up this condition of the forest creeks.

22                  Forest creeks may, say, do some damage by  
23       blowdown. The second risk moves in, the bugs are  
24       getting into the stands, start multiplying and spread  
25       over, so you have a secondary risk. You have, of

1 course, tertiaries, a tree being affected by one, they  
2 may be effected by many others.

3 This is a blowdown caused by heavy snow  
4 in limestone plantation in a plantation, very large  
5 plantation. These are thousands of hectares. This is  
6 not on a plantation few hundred acres. These are large  
7 plantations in thousands of hectares of pure black  
8 spruce or pure white spruce or sometimes mixture, but  
9 it is obvious here that you create all kind of mess and  
10 this mess, of course, will carry through the dynamics  
11 of the plantations.

12 Next one, please.

13 Q. This is slide 142.

14 A. Madam Chair, I felt like crying when  
15 I saw this in 1984. This is a jack pine plantation  
16 which had great promise. The annual height,  
17 incremental height growth was one metre in this  
18 plantation and one could say that it was -- I partially  
19 was causing this problem of breakage. Look at these  
20 trees are bending down. Vigorous plantations hit by  
21 the snow collapse in this way.

22 When I had looked at it more in detail,  
23 these things more carefully, I had followed the other  
24 one because there is a large area of other plantation  
25 close by, I have compared it and I have found that the

1 reason these plantation really was hit hard was because  
2 the spacing was very wide. I think these trees were  
3 probably 12 feet by 12 feet and, as you know, the open  
4 growing tree usually gets heavy branches, lateral  
5 branches and of course the upper branches intercept the  
6 snow, snow gets accumulated and by sheer weight of the  
7 snow they go down.

8 If I would have planted this plantation  
9 in tighter spacing which, again, many people say you  
10 don't do that, tighter spacing means more trees, more  
11 expenditures; in other words, the economy is against  
12 the principle of tight spacing, close spacing, but  
13 anyway I planted it and that whole plantation went  
14 down. You see that wreck right now. I haven't got a  
15 picture of it now because there is lots of other  
16 vegetation and movements since then and it's partially  
17 covered, but there is your investment, Madam Chair, and  
18 it could be avoided.

19 Next one, please.

20 Q. How could it be avoided, Mr. Marek?

21 A. Well, I never would plant jack pine  
22 into that wide spacing, that's No. 1. No. 2, partly  
23 the problem was improper planting. The root system in  
24 many of these trees were headed in one direction; in  
25 other words, they didn't have this distribution of the

1 root system which give you more wind firmness.

2 So, of course, one tree starts falling  
3 and then the whole works went down. So these are risks  
4 which should be considered and counted very heavily in  
5 the management of conifer species by artificial  
6 planting.

7 Next one, please.

8 Q. Next is slide 143.

9 MADAM CHAIR: Excuse me, Mr. Marek.

10 THE WITNESS: Yes, ma'am.

11 MADAM CHAIR: With respect to the  
12 direction of the roots, does that occur in the nursery  
13 or does it occur when you put the seedlings in the  
14 ground?

15 THE WITNESS: No. You see, nursery stock  
16 has usually very few roots because you have an ideal  
17 condition in the nursery; you have enough minerals, you  
18 have enough nutrients, you have an ideal moisture  
19 condition, so the tree is not forced to develop heavy  
20 root system. In some cases like spruce, I showed you  
21 that it does that, but jack pine usually have a very  
22 spindled root system.

23 Now, when you have an area which is  
24 fairly productive and made of loam or clays or very  
25 rich areas as far as nutrition is concerned, it's

1 pretty difficult to make room for that root system. In  
2 many instances, when you plant this root system the  
3 tightness of the soil itself prevent the distribution  
4 of it because it's so difficult to put that root system  
5 in radial, kind of around the tree.

6 So planters usually make a hole, cut, and  
7 they force these roots in, thus, No. 1, congesting the  
8 the root system itself, by itself together; No. 2, that  
9 the root system which may be composed of three or four  
10 main roots will follow the best condition possible for  
11 nutrient supply. So when you have, say, exposed area  
12 without any forest floor; in other words, forest floor  
13 which is biologically active, you know - and I pointed  
14 out to you the feather mosses and so on - of course you  
15 put that in and then the root system is automatically  
16 looking for nutrients.

17 I mean, they go in a path where the  
18 nutrients are, where the nutrients. The roots doesn't  
19 grow there, so they are looking for the environment.  
20 So they search and it quite often is that you have  
21 accumulation of debris of fertile material beside  
22 someplace. The area is not completely flat, you have -  
23 especially when you prepare sites like this, you have a  
24 microsite and then you have all kind of accumulation of  
25 debris which decomposes. So immediately the root

1 system go there to search. Immediately they go.

2 So that way you have development of the  
3 roots in one direction, towards the nutrient where the  
4 nutrients are or where the moisture is. And, of  
5 course, that way you are weakening the whole stability  
6 of the tree itself because roots go one way and perhaps  
7 wind go the other way and down they go.

8 So this is kind of leaning. We call it  
9 leaning, the tree is leaning in a certain direction,  
10 Basically due to the search for nutrients; secondly,  
11 for prevailing winds which is pushing the trees in a  
12 certain direction.

13 Is that satisfactory?

14 MADAM CHAIR: Yes, thank you.

15 MS. SWENARCHUK: Q. This is now slide  
16 143?

17 A. Yes. Of course there are other  
18 agents and these agents do very well on planted trees.  
19 Here is the white pine weevil. They get attacked by  
20 this pest and while the damage is not mortal and the  
21 tree doesn't die, it's obvious it affects their  
22 terminal growth, terminal shoots or terminal buds and  
23 the tree gets deformed.

24 Here we have several of them in  
25 plantations where the white pine weevil establishes

1 itself very well, and the problem with white pine  
2 weevil is that it may last for many years to come.  
3 They may come back to these trees after two years again  
4 or they may choose other trees here in the  
5 neighbourhood. So, again, this is a sign.

6 In European plantation management, you  
7 have all kind of problems of this nature, where these  
8 weevils do great harm to the plantation of trees  
9 itself.

10 The weevil protection in Europe - perhaps  
11 for your information, Madam Chair - is so extensive  
12 that it cost sometimes lots of money to keep that pest  
13 out of there and they trap them, they trap them, they  
14 cut this off, these dry portions in the time when the  
15 larva is there or when the eggs are there, they burn  
16 it.

17 Well, we don't do these things because we  
18 don't think it's necessary. We have one tree in maybe  
19 a hundred or so affected like that. Well, so what?  
20 Perhaps we will realize one of these that the tree  
21 itself is going to count not only in our yields but  
22 also by persisting the damage of these pests in the  
23 plantations and the plantation is should last a long,  
24 long time.

25 Now, we did some effort with limestone.

1       We were cutting it off, we were burning it off and we  
2       even tried to trap these things. We put the pieces of  
3       bark underneath where the bug is coming out in the  
4       spring and he goes between the slices of the bark and  
5       there he feeds. So instead of feeding here or here, we  
6       bury them down here.

7                   Anyway, there are many methods but they  
8       are very expensive ones. This is something which we  
9       must realize that in order to protect these values  
10      against the possible risk is a very expensive thing and  
11      requires dedication to it or commitment, pardon me,  
12      commitment to it.

13                  Next one, please.

14                  Q. Mr. Marek, do you have an opinion as  
15       to how a plantation tree's susceptibility to something  
16       like this compares to the susceptibility of trees in  
17       natural stands?

18                  A. All documentation, and it's part of  
19       my presentation in the book here, that indeed we can  
20       minimize these things by establishing different  
21       prescriptions or follow different prescriptions where  
22       we can apply it.

23                  Well, one fact of course is obvious, that  
24       when you deal with any kind of natural regeneration,  
25       you deal with a multiplicity of many trees. In natural

1 regeneration, you don't put one tree here and ten feet  
2 up another tree and so on. There you deal with many  
3 thousands to start with, and by sheer numbers, sheer  
4 numbers the environmental condition and the whole  
5 system is more protective.

6                   If you are going to lose one tree in ten  
7 thousand trees naturally established, big deal, but  
8 when you lose one tree in a plantation of this nature,  
9 it's a dig deal really because you lost part of that  
10 stand which cannot not operate otherwise efficiently  
11 because with these trees you may impact on the other  
12 trees, and once you have two trees dead in a plantation  
13 which may consist of only a few hundred trees, you are  
14 losing lots of volume, you know, if you project these  
15 things.

16                   This is why in really intensive  
17 management, and that's a rule of kind of thumb, the  
18 intensive managers say you cannot lose one single tree,  
19 you have got to have it all or nothing; in other words,  
20 you have got to be very conscious of these numbers you  
21 have.

22                   In natural regeneration it doesn't  
23 matter, you may loss, 10, 15, 20 trees to this risk and  
24 you are still going to have a very nice stand because  
25 five in fifteen thousand doesn't matter, but here it

1 counts. So intensive managers across the world are  
2 very much in favour of absolute protection, absolute  
3 follow-up of these risks and prevent them because they  
4 cannot afford these losses.

5 Q. Do you have an opinion as to whether  
6 large area clearcutting in any way contributes to the  
7 development of these problems?

8 A. Again, it's obvious, it's common  
9 sense that this large area which is devoid of trees is  
10 going to present greater risk due to the number of  
11 drastic changes of the environment.

12 No. 2, you are without control of many  
13 biological factors and, after all, these biological  
14 factors are also affecting these pests and risks  
15 because they create very good conditions for these  
16 pests to multiply. There's lot of food there, there's  
17 all kind of space for them, there's all kind of hiding  
18 places for them, so you have certain groundrules how  
19 you prevent this risk.

20 The Europeans, of course, are dealing  
21 with this issue for many, many years so they know some  
22 of them. For instance, one of the typical cases, how  
23 do you prevent, say -- I worked in Harz Mountains in  
24 Germany for quite a while and, you know, there were  
25 books written on how you prevent snow damage in certain

1       strata, in certain elevations; in other words, there  
2       was pages and pages, you do this and this in that  
3       elevation to prevent snow damage, you do this and that,  
4       such that you have to create -- and it's strictly an  
5       environmental thing.

6                  You plant the trees in such a way or  
7        reforest in such a way that all these considerations  
8        are given, prevailing winds, moisture, the depths of  
9        snow. That's all computed and figured out and there  
10      are prescriptions to do it to prevent these things  
11      because they just can't afford it.

12                 So here we don't do it because we are not  
13      at that stage of this kind of intensive management, but  
14      while I'm talking about intensive management, may I  
15      point out to you, Madam, that there are only few areas  
16      in Canada where I have seen intensive management.

17                 We frequently talk about intensified  
18      management, we frequently talk in a jargon that while  
19      we do a little bit herbicide spraying or we do this, we  
20      are intensively managing. Well, I think it's a misuse  
21      of that name. Intensified management is a management  
22      where many other considerations and many other steps,  
23      many other steps are absolutely essential to get the  
24      kind of economic returns you are expecting. We are not  
25      at that stage yet.

1                   By planting trees and say we are going to  
2 spray it in two, three years or five years after, we  
3 are not very honest calling it intensive management.  
4 The problem itself -- now, with many people I have  
5 discussed this. We establish the plantation and the  
6 competition moves in, the competition by trembling  
7 aspen moves in and we say this: Oh, the reason we do  
8 it is because we want to minimize the effect of poplar  
9 or trembling aspen on that. We don't want to kill it;  
10 no, no, we want to minimize it; in other words, we like  
11 to, through spring, affect the growth of the poplar.  
12 This is a myth.

13                   However, we do it frequently because we  
14 are scared to tell the public: Yes, we are after  
15 killing these poplar trees because they compete with  
16 our -- and that is not intensive management.

17                   Next one, please.

18                   Q. This is now slide 144.

19                   A. This is -- no, pardon me, that's  
20 north of Ear Falls. Three years ago I went there.

21                   See, Madam Chair, here is a jack pine  
22 plantation. I bet you 40 per cent of the trees is  
23 affected by weevil and that weevil, that's affecting  
24 the growth. You can see the red tops all over, right.

25                   Now, it's a plantation which I would say

1       is not fully stocked - I sent for the stocking -  
2       however, in these individual trees when we deal with  
3       this, you know, anybody can guess, anybody can guess  
4       what we are going to have there, what it's going to be,  
5       which is heavily handicapped by this weevil insect, and  
6       forget about the high quality product here, I don't  
7       think you ever going to get sawlog out of it, or better  
8       material, you will get probably pulp. But again, if  
9       you talk about short rotation, Industry feel that this  
10      plant is justified, I couldn't approve of this.

11                   So you have many dangers here, that you  
12       are going to have understocked stands, you are going to  
13       chance trees, trees that will not grow straight. See  
14       the branches on top of it, is that worthwhile to do, is  
15       this sound economics? I don't think so.

16                   Next one, please.

17                   Q. Slide 145.

18                   A. I mention that in the last plantation  
19       established in these two districts, budworm came up  
20       just four or five years ago, not really hairy, not --  
21       this budworm wasn't there before. We always have  
22       budworm and we have good documentation on previous  
23       infestation in 20s, 30s, up to 55 was probably the line  
24       where the budworm moved out for awhile, but now it's  
25       hitting again, and this good plantation of white spruce

1 looks like limestone and this is actually very  
2 conservative, there is much worse than that and, you  
3 know, work very, very well, very well.

4                  Four years ago this fellow came up and  
5 start doing the mischief and it's going to be pretty  
6 difficult to get rid of it when you talk about area of  
7 say 10,000 hectares or...

8                  Q. Mr. Marek, how old are the trees in  
9 this slide approximately?

10                A. That probably has been planted in '74  
11 or '75 or so.

12                Q. And would you show the Board exactly  
13 how the damage from the budworm is obvious on the  
14 trees?

15                A. Well, damage of course occur by  
16 defoliation, that the larvae and the insect later on  
17 get situated in these strata here and eat up the  
18 foliage and, of course, tree cannot grow without  
19 foliage, so it affects severely the terminal growth.

20                And perhaps I have put before you this  
21 problem here, very similar prognosis of black spruce.  
22 I measured just few days ago, I have remeasured some of  
23 these plots from 1984 which I have done with Bob Gray  
24 from the Great Lakes University, just general dynamics  
25 and so on, but since then budworm moved in and I figure

1 out through the measurements that I have lost or we  
2 have lost - we, the public - have lost on these  
3 plantation approximately metre and half of mean annual  
4 growth in last four or five years.

5 Q. That's in the black spruce  
6 plantation; is it?

7 A. Yeah. This is white spruce, but I am  
8 talking about black spruce. I think I have a picture  
9 of it later on. But this is the kind of shocking  
10 recognition that if one plant trees and put all prices  
11 of -- the expenses together and all of a sudden after  
12 few years you find out that you are losing metre and  
13 half just in four, five years of height, you know, and  
14 the productivity of sites - and general productivity  
15 very much depend on height growth compared with age and  
16 so - so you must recognize that we are up to something  
17 here which is much stronger than we are.

18 Now, I know there are foresters who are  
19 going to say: Well, you can spray it. Well, one of the  
20 problem is before you start spraying you have to know  
21 the dynamics, you have to know or have a better .  
22 information, bigger information in order to be active  
23 in protective measures.

24 Now, this area is close to Nipigon, it's  
25 right not far away from Highway 11 north of Nipigon and

1       it's very productive site. We haven't got too many  
2       productive sites in the district or in that area. We  
3       have a site along the Highway 11 towards Thunder Bay  
4       and Abitibi is involved in more intensified management  
5       there. But here the area which we -- I would say,  
6       which we should be producing timber and get the kind of  
7       maximized thing, maximized production here.

8                   And one of the problem is it's close to  
9       Lake Nipigon, it's close to Lake Superior, it's close  
10      to community of Nipigon which do lots of hunting,  
11      harvesting, berry picking and all kind of activities,  
12      and the lay public enjoy it very much. And once you  
13      start using drastic measures like, you know, chemical  
14      spray, you are going to have lots of people asking:  
15      Now, is that really worth it. Is that -- what are you  
16      doing, and you know probably better than I do.

17                  So in this area the impact is severe, the  
18      impact is that we are losing lots of height growth, we  
19      are hitting something which I myself dream of, we are  
20      not getting it. I was -- my prescription that time  
21      when I was working on the planning of this area was  
22      that in 50 years I will get 50 cords, well, ballpark.  
23      I give up on that.

24                  I gave up on that, because when I see in  
25      four years I lost already metre and a half of height

1 growth and I compare it to Plonski yield tables I don't  
2 think we will double our yields or triple our yields by  
3 intensification of this plantation. I think I going to  
4 be very lucky and happy if I get what Plonski is  
5 telling me in this natural growth, so...

6 Q. And what would that be in cords per  
7 acre compared with your 50 cord expectation originally  
8 approximately; do you recall?

9 A. Well, these natural stands I suppose  
10 they run at 80, 90 years rotation about maybe 180 cubic  
11 metres per hectare or something - maybe I am off here -  
12 but I think that is realistic. If we going to prevent  
13 this, we going to get it; in other words, I had to go  
14 way down in my expectation, however, that's the reality  
15 of the forestry.

16 Next one, please.

17 Q. Okay. This is now slide 146.

18 A. That's limestone -- oh no.

19 Q. This is Long Lac Forest, damage to  
20 balsam fir by budworm.

21 A. That's right. Yeah. Madam Chair,  
22 this was green forest, everybody expected good yields  
23 and good cutting arrangement in the second year growth,  
24 gone to the budworm, completely defoliated there, great  
25 fire hazard beside the losses of wood fiber which is

1       very close to the mill, matter of fact not far away,  
2       but this is the kind of problem of budworm which  
3       reminds us of risks in forest management.

4                          Next one, please.

5                          Q. Now, Mr. Marek, what in your view can  
6       be done with a stand in this condition?

7                          A. In this condition where you can see  
8       that majority foliage is gone, when you examine the  
9       cadmium, I don't think this things, No. 1; No. 2, if  
10      it's happened, deal with it using technologies or  
11      equipment which will be able to prevent, and this is  
12      actually waste, there is aspect of waste here. Nature  
13      usually doesn't be forced into and taken waste too.

14                         Next one, please.

15                         Q. The next slide is slide 121.

16                         A. Yeah. This effect of chemical  
17      tending to relieve black spruce regeneration changes in  
18      site forest floor. No difference in forest floor, no  
19      difference in forest floor and subsequent vegetation  
20      cover. Has been done in -- I have looked at this in  
21      Clay Belt and this is a natural regeneration of black  
22      spruce, it's from seeds, it's very little layers here  
23      which the seed germinated in this forest floor, here's  
24      the sphagnum, and does very well.

25                         What I must prepare you here that this

1 was on the edge of the larger cut-over area which was  
2 sprayed with chemicals to release these black spruce  
3 from this mess, and that is the alder. The alder is a  
4 brush species which occupy frequently certain sites and  
5 can really occupy or capture the site, thus preventing  
6 black spruce to grow through it.

7 So this is a little spot and here with  
8 a -- continue with next slide, can I have that, please.

9 Q. Could I just ask you some more  
10 questions about this one first.

11 A. Okay.

12 Q. What type of moss do we see on the  
13 forest floor?

14 A. I said already, Madam, this is  
15 sphagnum moss.

16 Q. And what type of site does that  
17 indicate then?

18 A. This is wet site in Clay Belt. In  
19 other words, there's quite prominent layer of organic  
20 material and below you have clay, so it's a typical wet  
21 site in Clay Belt.

22 Q. All right. And the next slide which  
23 is slide 122, represents what, please?

24 A. Okay. This is right in the  
25 neighbourhood where the chemical was used, released

1       that little black spruce which I described right here,  
2       it's only few feet from here.

3                     Look there what's happened, we have  
4       eliminated the competition, the alder disappeared  
5       because it was treated chemically and defoliated very  
6       quickly; matter of fact, the whole stand was destracted  
7       because the stems are dry, dead.

8                     But look at the impact on the forest  
9       floor, the forest floor, it was striking there, instead  
10      of having done release black spruce here - and this was  
11      done in sequence I think in two years or could have  
12      been three years, I am not quite sure here - but  
13      anyway, the black spruce just disappear.

14                   And there are two options of course, one  
15      is that it was too late for that black spruce to  
16      recover, but the other thing which I have documented  
17      later on after -- I look at this and we thought, there  
18      was several other foresters with me on this, we said to  
19      myself what's happened to that black spruce, I cannot  
20      find any.

21                   And could I see the next slide, please.

22                   Q. This is now 123.

23                   A. Here we have found, we have found  
24      that completely new generation of floristic component  
25      of the floor took over. On a swampy site, call it

1       swampy site, wet site, specie like fireweed which is an  
2       indicator of dryness or dry site, preferably not swamp  
3       site, definitely not; start appearing as a floristic  
4       component on the site. And we have found several black  
5       spruce that just were there dry out, so immediately,  
6       what was the purpose of this spray? This may have been  
7       a spray which was done experimental, I don't know, but  
8       it was -- well, I would say maybe 15, 20 hectares of  
9       this condition.

10                   So, is that good?

11                   MADAM CHAIR: Yes, thank you.

12                   MS. SWENARCHUK: Q. The next series of  
13       slides deal with the issue of prescribed burning,  
14       and we have now slide 133 which is a prescribed fire  
15       line through Leduc Township, Geraldton District, 1965.

16                   A. Yeah. I don't know if you had  
17       opportunity to see slides, but I just included it in my  
18       presentation to show just what prescribe burn looks  
19       like, fairly fluctuating, and there is big difference,  
20       of course, between prescribed burn or burn initiated by  
21       man and, of course, fire in the standing timber.

22                   As you see, that kind of wood with quite  
23       amount of deposit, that slash on the ground is hot,  
24       seed trees here, poplar or birch. A certain  
25       prescription, of course, has been given to you by MNR -

1 I won't go into it - but what I want to say here is  
2 this, that one must not identify burning by prescribed  
3 means and wild fire in the standing timber.

4 Can this plantation has been ahead of --  
5 what are the dates of it?

6 Q. It indicates frost damage to the  
7 white spruce plantation, Big Pic Management Unit, 1983.

8 A. Right. I took this picture during  
9 this trip down to Terrace Bay in the area south of  
10 Beardmore and many productive sites after cutting has  
11 been turned into this kind of problem.

12 The effort was made, the plantation was  
13 initiated, but due to the ecological environment  
14 condition here the black spruce wouldn't regrow there,  
15 it just affected heavily, not only by risk called  
16 frost.

17 In other words, strictly environmental  
18 problem of deforestation in the area is the risk of  
19 frosting or low temperature and the other pathogenics  
20 go with it which may be burn and which may be -- many  
21 of which I have already suggested here. So you have  
22 the kind of plantation which, you know, take it  
23 probably long,  
24 long time to produce forest or decent forest.

25 Next one, please.

1                   Q. We are now at slide 149 which is--

2                   A. Okay, risks. Risks are not only man  
3                   made or nature made which present us with certain  
4                   situation and dilemas where nature say we are the boss,  
5                   but we introduce all kind of risks by practices which I  
6                   think perhaps are avoidable.

7                   Here's the area which was sprayed by, I  
8                   think was 2,4 in order to eliminate the competition by  
9                   poplar. Well, let's -- first of all, I know this area  
10                  quite well. The competition was minimum, the presence  
11                  of poplar or any competing vegetation as you see here  
12                  was minimum.

13                  There was odd poplar here and there, but  
14                  in our forest management practices we use this kind of  
15                  extensive, very extensive approach to everything; in  
16                  other words, this was done by conventional aircraft  
17                  which blanketed the areas with herbicides and the  
18                  results was - and I don't know if the government dose  
19                  of herbicide was too strong or if that was by doubling  
20                  the passes or whatever - all the jack pine was not in  
21                  good condition to respond favourably or respond  
22                  protectively against herbicides, therefore, there are  
23                  many, many aspects of these things which we, to some  
24                  degree, know very little.

25                  It was sprayed and the effect was redding

1       of the foliage. When I saw it first, and this was  
2       quite a few years back, I thought it be damaged to the  
3       extent the trees may die. So immediately after I do  
4       this picture I took the knife and start testing the  
5       cadmium, I look at buds because that's where the  
6       problem lies in the damage the cadmium, if you damage  
7       the bud, then of course you are in trouble. But in  
8       this case it looked like that perhaps the buds were not  
9       affected and stand may recover.

10                   Matter of fact in this case stand have  
11       recovered and is green now, and the kind of horror  
12       picture actually say: Well, it looks bad at the  
13       beginning. But let me point out still one problem with  
14       this, and the problem is that even if we got away with  
15       these things; in other words, the stand is recovering,  
16       the damage still has been done and when you look at -  
17       and I haven't got a close-up picture I had it in  
18       previous slide presentation, I'm sorry, I haven't got  
19       it here - that obviously the photosynthesis damage had  
20       its effect and many buds must have been affected  
21       because the lateral and the horizontal growth; in other  
22       words the height increment, has been affected by many  
23       mile in the growth.

24                   If these trees were not damaged they  
25       would have probably been much higher increment; in

1 other words, the growth would have been directed a  
2 different way and probably the whole crown structure  
3 cover looked different.

4 As it is right now it's growing but the  
5 effect, damage still has been done, especially on  
6 terminal growth and the branching of the trees, it's  
7 branching heavy. So you can recognize it, you can see  
8 right away. You follow these growth again you get to  
9 the certain period where the distortion occur and the  
10 effect is often.

11 The other thing what I object to here is  
12 why spray area where the components of competition is  
13 not very critical, and I think that the presence of  
14 poplar or any competition at the beginning is not  
15 justifying this kind of blanket spraying and I think  
16 there is quite a misunderstanding where the inspector  
17 or the fellow who proposed or prescribed this treatment  
18 should be aware of a condition and say: Look, is that  
19 tending justified at this moment, or is it not  
20 justified. And in many instances I have found from  
21 foresters, especially young foresters who are too  
22 anxious, too anxious to go in areas with herbicide  
23 spray.

24 I have visited many young foresters,  
25 especially during the 1983 and '84 investigation for

1 MNR where I said: Now, just hold your horses. Why do  
2 you want to spray here. Well, look at that hazel, it's  
3 up to here. And I said: No, hazel doesn't go higher  
4 than this. These cherry or trees which are there, they  
5 will not endanger, just hold the horses for a while and  
6 come back next year or year after and see what it's  
7 doing. Well, I haven't got time to do it. I said:  
8 Well, too bad sonny, you better go out, otherwise you  
9 may create situation like this.

10                   And, Madam Chair, I talk as to the pupils  
11 here because I have seen these problems too frequently  
12 to be happy with that kind of performance. The public  
13 going to scream hell, the public going to obviously be  
14 very, very upset about condition like this, especially  
15 if it's around the roads and, you know, maybe they can  
16 have this visual impact. And I will be later probably  
17 dealing with this problem in Beardmore there with the  
18 Society I am coaching or I am consulting with.

19                   And it's often that people nowadays get  
20 very upset about this thing and it's not necessary,  
21 it's actually not necessary, this area never should be  
22 sprayed. And it's know-how, a professional judgment by  
23 professional people who should make these decisions and  
24 monitor these things, the same time to avoid this kind  
25 of problem.

1                   Next one, please.

2                   Q. This is now slide 150.

3                   A. Typical area spray, the intensive  
4       mechanism for release of primary conifers. This area I  
5       cannot see here, what --

6                   Q. It is described as new growth of  
7       trembling aspen after chemical tending, 1986, Lake  
8       Nipigon Forest. I believe the photo was taken 1989.

9                   A. This has been sprayed. The  
10      combination of spraying and association of trees is a  
11      problem, No. 1, for me because most of it is balsam.  
12      If most of it is balsam I wouldn't spray it, I would  
13      just say it's going to be eaten up anyhow by budworm,  
14      but very poor stocking to black spruce after cutting.

15                  This has been planted, this is natural  
16      growth, and some of it is balsam which you can see is  
17      not worthwhile to put, but here again has been sprayed  
18      by blanket spray. And you can see result of that spray  
19      was very efficient, they certainly killed poplar which  
20      was 10 years old or something that age, but any  
21      spraying has a kind of double edge effect, and that  
22      effect is that you may kill or you may eliminate the  
23      growth or restrict the growth of deciduous species, and  
24      poplar is one of the difficult -- most difficult one to  
25      deal with.

1                   But in many instances the new growth  
2 become immediately problem year after because very  
3 vigorous second growth from suckers appear and you  
4 cannot stop that sucker and it just grow and grow twice  
5 as fast sometimes, and in few years going to be  
6 probably there where this material was before it got or  
7 when it got sprayed.

8                   So when you look at this, when you look  
9 at quality of stand which is planned to be free to  
10 grow, this is free to grow area that's going to produce  
11 beautiful timber because it is original spruce working  
12 group. So they spray, now it's free to grow. Well,  
13 free to grow for what, free to grow for poplar.

14                  Madam Chair, this is absolute waste of  
15 money. This is a decision made by people who should  
16 know better, who should know and quantify very clearly,  
17 is that balsam fir or that spruce really worthwhile to  
18 spray. It will produce something, worthwhile in the  
19 future for a while. What will be the effect of the  
20 spray. Will that spray affect the poplar you see here,  
21 or will it create a problem of poplar coming back  
22 immediately after and create problem every two or three  
23 years.

24                  What bothers me about ground rules, and I  
25 will say it very simply here, what bothers me about

1 ground rules they are not properly thought out; in  
2 other words, the thoughts behind that is shortsighted,  
3 it brings benefits to the managers that they can  
4 proclaim area free to grow under condition which are  
5 not acceptable to the management who feel strongly that  
6 the area should come back in primary group as it was  
7 before.

8 That means if I have a spruce there I  
9 should have spruce here, and now we are involved in  
10 this extremely expensive and extremely dubious  
11 qualification of our stands which do not qualify. This  
12 is not spruce working group and never will be because;  
13 in other words, to get some conifer stocking here we  
14 are going to have to spray this.

15 The ground rules, if I read it clear,  
16 states we plant, we spray once or twice and we get -  
17 and there's big question mark with free to grow - it's  
18 free to grow. This is -- I can show you dozens of  
19 example of this actually. While forester who make this  
20 prescription is extremely shortsighted, does not  
21 realize consequences of this action and is eventually  
22 put in the position to defend, to defend this kind of  
23 management before public.

24 MADAM CHAIR: Under those situations, Mr.  
25 Marek, were the use of herbicides for temporary

1 suppression critical at some point to the survival or  
2 the growth of the tree?

3                   THE WITNESS: Well, maybe in many  
4 instances I agree with you but, Madam Chair, you must  
5 realize, as Baskerville stated before you, you know,  
6 the process is ongoing, the process is so changeable  
7 that you cannot honestly, in certain point of the  
8 dynamics of stand dynamics say it's going to be but it  
9 will not be next day; in other words, it may be 10 days  
10 or 50 days or 200 days or 2 years.

11                  So this is why these dynamics have to be  
12 followed up and we got to have more deeper perception  
13 of these changes.

14                  Somebody told me when he treats area with  
15 biochemical spray and say I plant trees, I sprayed  
16 once, I may spray second time, and then what, it's free  
17 to grow? I challenge this statement. In my experience  
18 it has shown me, and I have been involved in chemicals  
19 since chemicals came on the market way back, I have  
20 dealt with all, Tordon, Valpar and -- oh gosh, and I  
21 came to conclusion that in many instances these effects  
22 are counterproductive.

23                  I am not saying that under certain  
24 conditions, in very intensive management chemical will  
25 be used in order to get -- if I'm there on the project

1       we probably have to but, on the other hand, area of  
2       boreal forest when we talk about multi-purpose  
3       forestry, when we are talking about quote "intensified  
4       forest management", we have to design our different  
5       strategies and, in many instances, I say that these  
6       actions are counterproductive.

7                   MADAM CHAIR: Shall we call it a day, Mr.  
8       Marek?

9                   MR. MARTEL: No, we go if you -- I could  
10      go, if you wish.

11                  MADAM CHAIR: We are going to adjourn for  
12      the day, Mr. Marek, and we will see you at nine o'clock  
13      tomorrow morning.

14                  THE WITNESS: Thank you.

15                  MADAM CHAIR: Thank you. And we have how  
16      many slides left, Ms. Swenarchuk?

17                  MS. SWENARCHUK: Ten slides left.

18                  MADAM CHAIR: And so what happens when we  
19      finish the ten slides?

20                  MS. SWENARCHUK: Then we will review some  
21      of the issues in the witness statement I think and then  
22      move to the Beardmore Watchdog Society witness  
23      statement. I hope we will finish on that tomorrow.

24                  MADAM CHAIR: All right.

25                  Ms. Cronk, you will be ready to begin

1       cross-examining possibly on Wednesday morning?

2                   MS. CRONK: I understand that Mr. Hanna  
3                   will be here and is preceding me.

4                   MADAM CHAIR: Mr. Hanna.

5                   MS. CRONK: So the answer is I understood  
6                   that Mr. Hanna will be cross-examining and that he  
7                   would precede me on Wednesday and I will be ready on  
8                   Thursday.

9                   MADAM CHAIR: Thank you very much.

10                  ---Whereupon the hearing was adjourned at 4:05 p.m., to  
11                  be reconvened on Tuesday, November 6th, 1990,  
12                  commencing at 9:00 a.m.

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